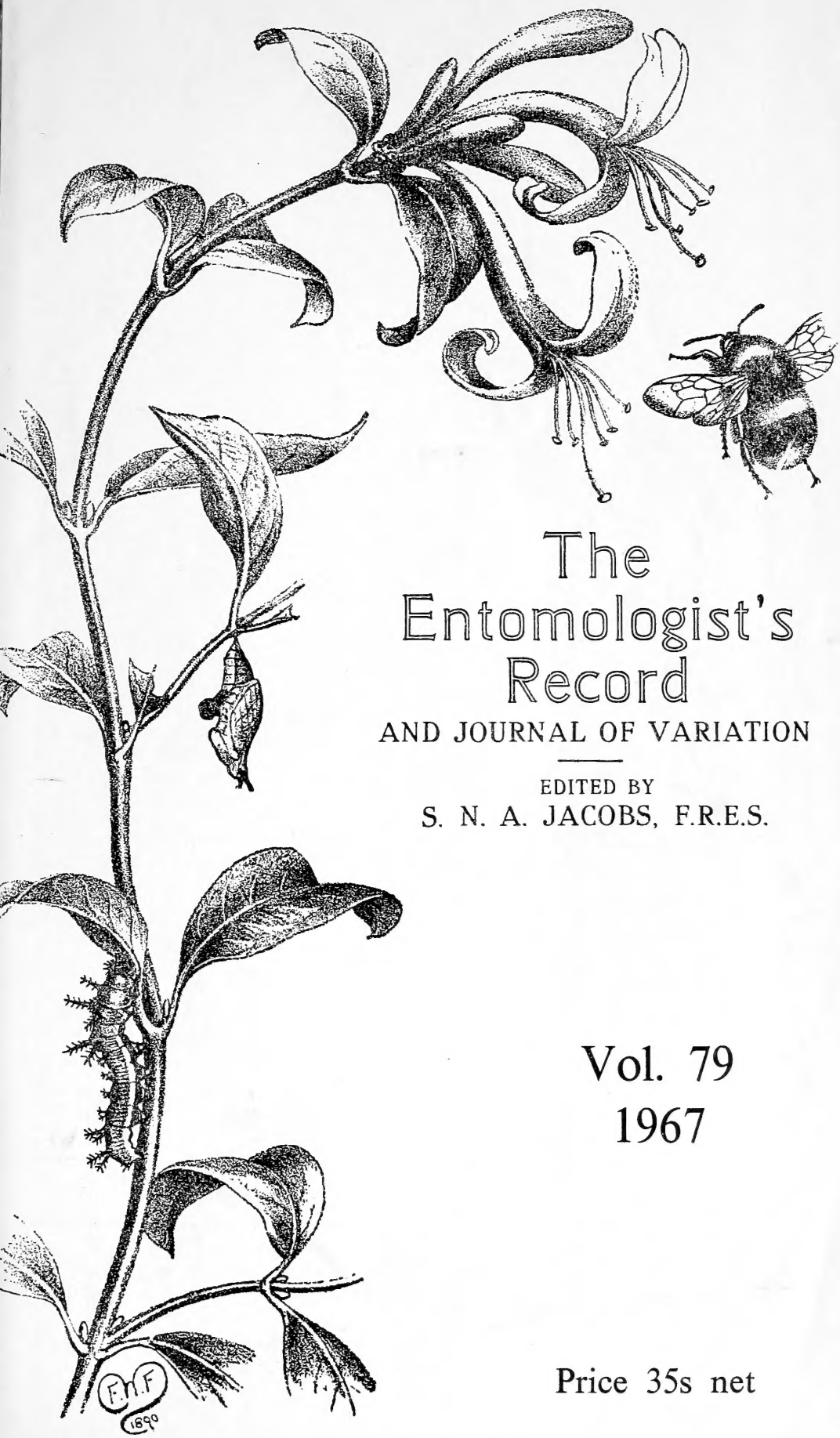

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AND JOURNAL OF VARIATION

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S. N. A. JACOBS, F.R.E.S.

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

Edited by S. N. A. JACOBS, F.R.E.S.

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Correction for Title on Page 273, Vol. 78.

A new subspecies of *Pseudonympha trimenii* Butler* (Lepidoptera : Satyridae) from the Great Karroo

By C. G. C. Dickson

Holiday in Suffolk, 1966

By S. Wakely

On the 4th June my wife and I went to Thorpeness, Suffolk, to commence a fortnight's holiday. In the evening we were joined by J. M. Chalmers-Hunt who came from West Wickham, Kent, in his car and brought along my m.v. moth trap, but was only able to stay with us for the first week. We had been to the same bungalow in previous years and knew the lay-out of the district with its wonderful beach on the east side and extensive fens on the west. We soon settled in and had the m.v. light fixed up ready for switching on at dusk. It was the first time we had been here in early June, and with really warm weather we anticipated an enjoyable entomological holiday.

During our stay we had trips further afield in the car daily, usually after lunch, as there was shopping to do each morning as well as many specimens to set, particularly from the trap which every day contained lots of local species which we wanted. The trap was examined each morning in the garage, moths that were skittish invariably flying to the small window where they were boxed if wanted by one of us. Those not wanted were released in long grass or behind some boxes, as birds were often waiting for strays. Places visited included Wicken Fen and Chippenham in Cambridgeshire (twice), various places in the Breck, as well as local places like Southwold and Dunwich.

On Monday (6th) we visited Blythburgh where a few larvae of *Leioptilus lienigianus* Zell. were found on *Artemisia vulgaris,* together with numbers of larvae in spun leaves of elm. Samples of these elm-feeding larvae were taken and they proved to be *Archips rosana* L. A few flowers of the beautiful Water Violet (*Hottonia palustris*) were noted here and much admired. We then decided to call on the local entomologist, A. G. Baker, who lives at Reydon. We had an interesting talk on the entomology of the district and he showed us a box containing some of the rarities he had taken locally, after which we had a look round his garden where we found larval spinnings of the Plume *Leioptilus lienigianus* on some plants of *Artemisia vulgaris.* A small larva found on one of his apple trees proved on emergence later to be *Acleris holmiana* L.

On Tuesday (7th) we were joined by Col. A. M. Emmet who stayed with us until our return home on the 18th. In the afternoon we visited a place by Thorpeness railway station where on a previous visit we had found larvae of *Depressaria chaerophylli* Zell., but only a few small spinnings among the flowers of *Chaerophyllum temulentum* could be found. These proved later to be the species we were after. From here we went a few miles further on to Dunwich Cliffs near the old Coastguard Cottages. Larvae of *Paltodora cytisella* Curt. were found here feeding in the stems of bracken (*Pteridium aquilinum*). The feeding places of the larvae were easy to see as the infected stem is usually distorted and swollen. Most of the distorted stems examined contained no larvae or else a sickly one that had obviously been "stung". The larva is reddish in colour, reminding me of a miniature *Cossus* larvae. Owing to the foodplant quickly deteriorating and going soft, it is a good plan to wrap the stems in tissue paper—say two together—and place those so wrapped in a container with very fine netting or nylon stocking covering to allow ventilation. On examination after about a week it will be found that the bracken is

rotten and the tissue must be thoroughly searched for any larvae that have spun up. In this way one can be sure of breeding the moths. In my experience the larva does not spin up in the stem as said by some authors. It is a species well worth breeding as caught specimens are usually very rubbed. Some large patches of fine silk webbing were noticed on the gorse bushes here. Very small particles of what appeared to be frass were seen among the webbing and we started looking for the larva causing this. A closer examination with a lens showed that each tiny particle was alive and we realised then that the webbing was caused by one of the silk-spinning mites apparently belonging to the genus *Tetranychidae.*

On Wednesday (8th) we all set out for the long journey to Wicken Fen in Cambridgeshire. This was a most interesting trip for me but not very productive, although a few *Eupithecia pygmaeata* Hübn. were taken. From here we went on to Chippenham Fen where *Nascia cilialis* Hübn. was captured.

On the 9th and 10th we worked the local heaths and fens. The commonest moth in gorse on the heaths was *Coleophora albicosta* Haw., which also came freely to our m.v. light. We did not find the fen very productive during the day but at dusk numbers of local species were taken, including *Meliana flammea* Curt., and several pairs were taken *in cop.* on the reeds. *Orthonama lignata* Hübn. was also found resting on the herbage with its wings folded butterfly fashion over its back. Chalmers-Hunt found a number of larvae in cases feeding on lichen on cement posts by the bungalow which were determined as *Luffia lichenosa* Geoffr. This species was of particular interest as it was new to the Suffolk List. As far as is known only the parthenogenetic form occurs in Britain. Col. Emmet tells me he had one emerge (a female, of course) which shrivelled away to almost nothing.

On Saturday (11th) we went to Wicken Fen and as Chalmers-Hunt was returning home on Sunday he decided to go on from there in the early hours. We had intended to work the fen at night but, owing to a car breakdown and also heavy rain when we got there, Col. Emmet and I decided to leave about midnight. H. E. Chipperfield and several other entomologists were there with their generators and lights. Apparently soon after we left the rain stopped and many local species were taken including among others *Eustrotia bankiana* F.

On Monday (13th) we visited Snape, a few miles inland from Thorpeness, and found three larvae of *L. lienigianus* on the *Artemisia.* One of these was found in its spun leaf but the other two were resting on the top of leaves and were parasitized.

Chippenham Fen was again visited on the 14th and eight *E. bankiana* were taken on this occasion. It was hard work getting this moth, stumbling about in the tall grass and reeds on very uneven ground. Several were lost when they settled and we found them difficult to flush after they went down in the herbage. However, those taken were in excellent condition. On the way back we visited Tuddenham and took several of the very local plume *Crombrugghia distans* Zell.

On Wednesday (15th) we visited Southwold and found *Phalonidia griseana* Haw. fairly common on the salterns near the Bailey Bridge which crosses the river Blythe to Walberswick. Near here we saw a heron in a ditch trying to swallow an eel which it had just caught.

The following Thursday and Friday were rather rainy, but we were

both delighted to find *Lithocolletis ulicicolella* Staint. quite common by beating the overhanging gorse branches over a net. This was by the roadside between Aldeburgh and the bungalow. At the same time we also took about a dozen *Blastobasis decolorella* Wollaston which tumbled out of the gorse. This latter species also came to light.

Larvae of *Agonopterix cnicella* Treits. were fairly common on Sea Holly (*Eryngium maritimum*) growing on the beach by the bungalow. The little terns were nesting there, too. After a long search a young chick was found, wonderfully camouflaged as it rested among the stones. While we were searching, the old birds kept wheeling overhead uttering piping calls. The parents repeatedly dived at us and, giving a short, sharp cry on a different note near our heads, ejected particles of what appeared to be well digested fish bones from their beaks. This came down like fine rain and we were well peppered with the material whatever it was.

The moth trap was most useful and kept us busy setting up something special every day. The thermometer showed a temperature of around 70 deg. F. nearly every night. In spite of the large number of moths in the trap the majority of the specimens were in really good condition. *Callimorpha jacobaeae* L. was one of the commonest species present and six or eight *Arctia villica* Clerck were usual each day. On the 19th the trap was teeming with *Plusia gamma* L. and there had evidently been an immigration on that night. Two unusual visitors to light were *Vanessa atalanta* L. and *Macroglossum stellatarum* L.

The best captures at light were undoubtedly two *Arenostola extrema* Hübn. which appeared on the 11th. This was new to the Suffolk List. Three *Heliothis viriplaca* Hübn. were taken—one of the rarities nowadays. *Meliana flammea* Curt. was in larger numbers than expected for Thorpeness. *Scopula rubiginata* Hufn. was a species we particularly wanted and nine were taken in the second week—eight perfect and one very ragged. A single *Scopula ornata* Scop. was a surprise and a great rarity for Suffolk. The local and beautiful knothorn *Epischnia boisduvaliella* Guen. was present—10 or 12 most nights. *Cochylichroa atricapitana* Steph. is worth special mention owing to the large numbers that came each night. The local *Collicularia microgrammana* Guen. was common at dusk round *Ononis* and also came freely to light, obviously freshly emerged.

Other species which appeared were *Hyloicus pinastri* L., *Tethea ocularis* L., *Spilosoma urticae* Esp., *Heliothis peltigera* Schiff., *Arenostola elymi* Treits., *Apamea unanimis* Hübn., *Eumichtis adusta* Esp., *Earias clorana* L., *Schrankia costaestrigalis* Steph., *Scopula emutaria* Hübn., *Nycterosea obstipata* F., *Ortholitha plumbaria* F., *Selenia lunaria* Schiff., *Phtheochroa rugosana* Hübn., and *Batia lambdella* Don. *Schoenobius gigantellus* Schiff. (several) and *Bryotropha desertella* Dougl. (beautifully fresh) might also be mentioned. The complete list of all species taken or seen would be too long to print, but they numbered over 150 species.

My wife and I left on Saturday (18th) to go home by train. Col. Emmet had another look at the *Chaerophyllum temulentum* and told me he took several specimens of *Phaulernis dentella* Zell. as well as some *Micropterix aruncella* Scop. among the flowers before his return by car to Saffron Walden, Essex.

26 Finsen Road, Camberwell, London, S.E.5. Nov., 1966.

A New Aberration of *Aphantopus hyperantus* (Lep. Satyridae)

By Major A. E. Collier

On 18th July 1964, Mr. Payne, of Wellingborough, caught a remarkable female aberration which has not hitherto been named. Mr. Payne obtained a number of eggs and kindly gave me 17 larvae in 1965.

From the typical insects resulting I obtained a mating and over 100 eggs, which produced 26 male and 32 female imagines in 1966.

Of these, 7 males and 6 females were aberrations like their grandmother, a result which indicated that the character is a simple recessive. Greatly assisted by Mr. P. B. M. Allan I venture to name and describe it as follows:—

Aphantopus hyperantus L. ab *chrysophalaros* (ab Nov)

Underside. The outer gold rings on the ocelli have greatly thickened by encroaching on the inner black ring to such an extent that in extreme cases the ocellus becomes a white centred gold disc. In less extreme cases the black ring becomes very thin or may consist only of a few scattered dark scales.

Upperside. The gold ring is thicker, and the ocelli stand out more clearly in both sexes, than in typical insects.

The material on which the above description is based is as follows:— Type and allotype bred at Cranleigh in July 1966 (A. E. Collier); paratype caught in Northants on 18/7/64 by Mr. Payne.

The Genetics of *Lysandra coridon* Poda ab *semi syngrapha* Tutt

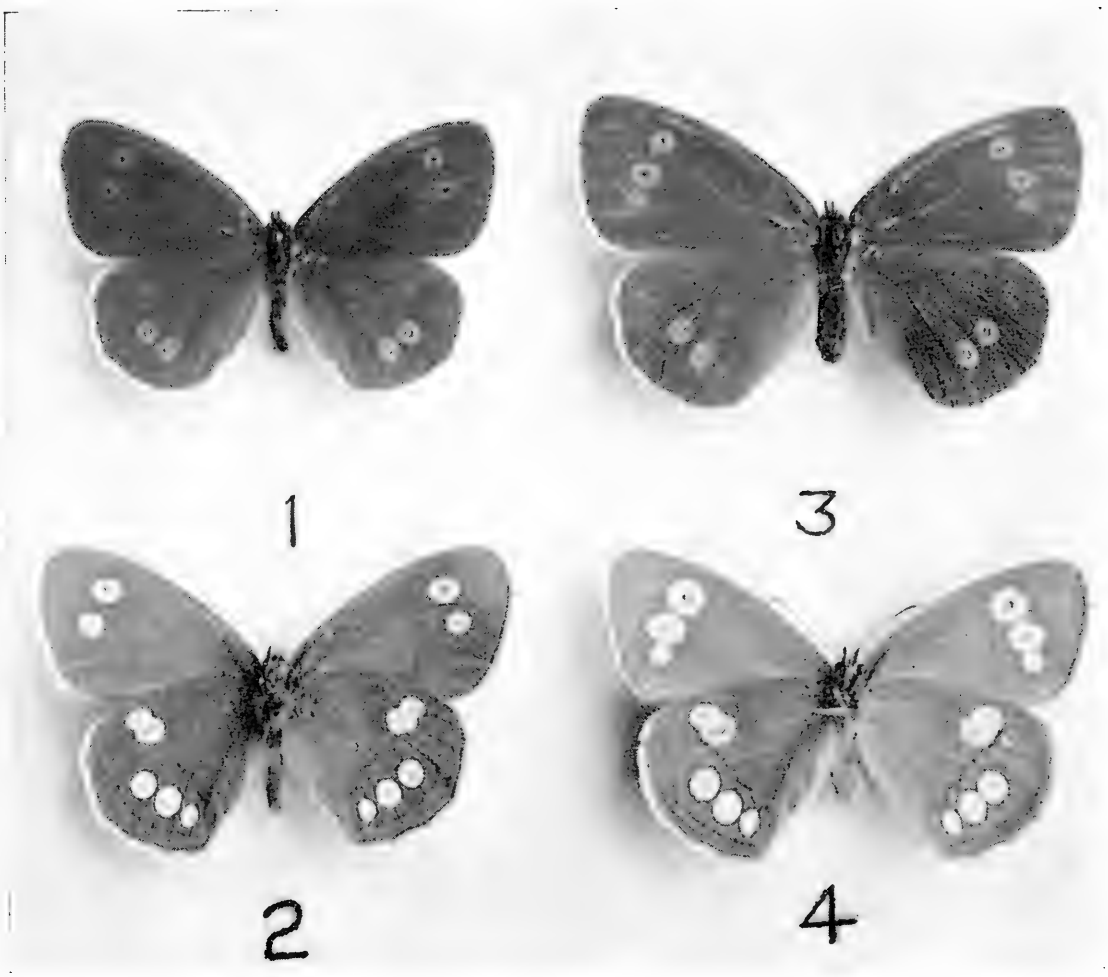
By Major A. E. Collier

Since 1958 I had been trying, without success, to obtain a live *semi syngrapha* female, and it was not until September 1964 that I succeeded in finding a very worn, and almost doubtful, specimen on a Wiltshire down.

From this insect I obtained 51 eggs between the 9th and 12th of September. Only a few of these eggs hatched out in the spring and the final result was 4 males and 4 females, all typical, in July 1965.

One successful mating was obtained and produced approximately 100 eggs. Again there was a poor spring hatching, and on 18th May 1966, I counted only 24 larvae. The imagines emerged from 30/7/66 producing in all 11 males, all normal, and 12 females, of which six were good examples of *semi syngrapha.* Attempts to obtain a mating between a wild male and one of the female abs failed. The heterozygous son of such a union mated to any unrelated female could have produced *semi syngrapha* females among the daughters. This would have been convincing proof that *semi syngrapha* is a sex linked recessive, but from the breeding results above it is reasonable to assume that this is so.

CORRECTION: *Ent. Rec.*, **78**: 244, line 4; delete "*kindermanniella*" and substitute "*deauratella*".



Aphantopus hyperantus L.
ab. *chrysophalaros* ab. nov.

Figs. 1 and 2.—♂ Holotype (upper and underside). Magnification 1·12.
Figs. 3 and 4—♀ Allotype (upper and underside).

Photograph by R. M. Long.

Notes on *Nudaurelia cytherea capensis* Stoll., and *Nudaurelia cytherea cytherea* Fabr. (Saturniidae)

By J. S. Taylor

For seevral years, since 1957, prior to his retirement in 1963, the writer gave some time to a biological study of *Nudaurelia cytherea capensis* Stoll., otherwise known as the Pine Tree Emperor Moth, in the Eastern Cape Province, and more particularly in the neighbourhood of Port Elizabeth where he was then stationed.

The larva is well known throughout the timber-growing areas of the Cape as a defoliator of *Pinus radiata* D. Don., having been recorded as such since 1885. In the Transvaal and Swaziland, also possibly in parts of Natal, its place appears to be taken by *Nudaurelia cytherea cytherea* Fabr. The taxonomic position of the two insects remains uncertain, but it is thought that they both deserve specific rank. However, until such time as a thorough examination of their genitalia can be undertaken they must be considered as two separate subspecies of the same insect.

The greater part of the present paper concerns *capensis* but some data regarding *cytherea* are given towards the end.

Tooke and Hubbard (1941) gave a full account of the life-history and control measures for *capensis*, as known at that time. They also refer to *cytherea* as occurring in the Transvaal. Its host-plants were then unknown, and it is stated that it "had never been known to attack exotic trees".

Nudaurelia cytherea capensis

Host-plants and host preferences

To the list of larval host-plants given by Tooke and Hubbard (*op. cit.*) can now be added the following:—

Leucospermum ellipticum Thb.
Protea mundii Klotz.
Rhus crenata Thb.

Acacia saligna Wendl.

By far the most popular host in the vicinity of Port Elizabeth is *Leucospermum ellipticum* which is found commonly in the western part of the district. At the appropriate times eggs and larvae of *capensis* can almost invariably be found on this plant. Other species of *Proteaceae* are also sometimes affected, while species of *Watsonia* and the leaves of guava are much favoured.

Where *Leucospermum* occurs it is often heavily infested, the plants being frequently defoliated, while plantations of *P. radiata* in the near vicinity may be left untouched. While this often happens in the Port Elizabeth area it is not always the case. However, for pine plantations in this area to be severely infested by *Nudaurelia* would appear to be unusual, if not the exception. The situation is quite different in the George-Knysna area, however, where pine plantations suffer severely from attack by the larva of the Emperor Moth. Here Proteaceae appear to be less prevalent. This also applies to the Grahamstown area where *P. radiata* on the local golf course has been heavily infested in recent years. A search of indigenous Proteaceae in the surrounding hills revealed no trace of *Nudaurelia,* while similar results were obtained in a large nursery where numerous species of Proteaceae are extensively cultivated.

At the Grahamstown golf-course many trees of *P. radiata* were completely defoliated and appeared to be dead or dying, their state being due at least in part to attack by *Nudaurelia*. In August 1961 this was particularly noticeable. Most of the *P. radiata* trees were stripped bare while *Pinus halepensis* Mill. trees were left untouched. Thousands of starving larvae were wandering around, many crawling on grasses and low-growing plants, while some were feeding on wattle (*Acacia molissima* Willd.) and on Eucalyptus.

Great difficulty was experienced in rearing larvae from the egg to maturity, particularly on *P. radiata*, even with larvae sleeved on growing pine; only four of the latter ever reached maturity. More success was achieved with *Leucospermum* and with guava, both of which were preferred to pine, more especially if the parent generation had not been reared on pine. Sometimes, however, larvae from pine-reared parents refused anything but a diet of pine, although usually *Leucospermum* and guava were readily accepted by larvae from any source, while it was easier to rear larvae to maturity on either of these host-plants than on pine, even if the latter were growing.

In connection with these host preferences, it is interesting to record that larvae, from eggs sent to Mons. P. C. Rougeot, of Muséum National d'Histoire Naturelle, Paris, thrived on *Quercus* and *Craetaegus*, but that those supplied with *Pinus sylvestris* L., all died.

Seasonal history

Tooke and Hubbard (*op cit.*) refer to two biological strains of *capensis*, the more common being that found in both eastern and western sections of the Cape. In this strain, the peak of emergence takes place in May and larvae occur until late November. In the other strain, which is stated to be not nearly so common, and is found in Natal, the adult emerges from January to April, while the larva occurs until July. In the present writer's experience, the first strain, in which adult emergence is at its peak during May, is found throughout the coastal area of the Cape from Alexandria to Cape Town, while the second strain is found inland as at Grahamstown, where emergence took place from mid-February to mid-April, and which, incidentally, more or less coincided with the emergence period of *cytherea* in the Transvaal.

The adult moth

Tooke and Hubbard (*op. cit.*) also refer to the tremendous range of colour variation in the moth of *capensis*, a fact which was confirmed over and over again by the writer at Port Elizabeth. Here adults from larvae fed on *Leucospermum* varied from light yellow, approximating the Transvaal form *cytherea*, to dark brown. Yellow, however, was the predominating colour. Adults, from pine-fed larvae in the Western Cape were predominantly dark brown in colour. This led to the suggestion that the larval host-plants affected the colouration of the adult, a view supported by the experiments of Pictet (1902) in which he obtained variations in colour and markings in several species of moths by rearing the larvae on different host-plants. However, investigation in Port Elizabeth did not support the theory in this case, and although light yellow adults from *Leucospermum* there predominate, and dark brown specimens from pine in the Western Cape, there would appear to be no hard and fast rule, and both dark and light coloured adults may be derived from either source.

In the George-Knysna area, where *P. radiata* is the principal host, yellowish adults predominate, while the majority of adults at Grahamstown, all derived from pine, were light yellow. Results with moths from Alexandria, reared on *Rhus crenata*, and from Humansdorp on guava, were very much the same, and yellow, or at least yellowish, specimens were in the majority, although there were gradations to darker forms.

Adults were roughly graded into three colour variations, namely light (i.e., yellow), medium and dark. The results from four different localities and hosts are given in tabular form as follows:

Locality and Host	*Light*	*Medium*	*Dark*	*Total*
Port Elizabeth				
Leucospermum	23	1	11	35
Humansdorp				
Guava	18	4	9	31
Alexandria				
Rhus	13	2	7	22
Cape Town				
P. radiata	2	8	27	37

It has been suggested that the variations in adult colouration may have some connection with rainfall and/or humidity during the pupal stage. This might well be the case, the dark form being more typical of the winter rainfall area (Western Cape). On the other hand, if not due to some environmental factor, it may be mutational.

Adults were paired and kept in separate cages at Port Elizabeth. Females lived up to 19 days, while the average duration of life for 15 females was 8·8 days. Males lived for from 5 to 12 days. The moths are reluctant to fly in daylight, but are capable of doing so, especially the males, when disturbed. Males come to light at times, but are not strongly attracted by it. Virgin females bring males; "assembling" being well known in the Saturniidae.

Oviposition was found to commence usually on the second night after the pair had been mated or placed together, but sometimes on the first night. Eggs are generally deposited in small single-layered batches on broad-leaved plants—the largest number found in one batch was 49. On pine needles the eggs are deposited in irregular masses, and are roughly piled one on top of the other.

Up to 220 eggs per female were obtained, the average for 15 females being 140·1.

The incubation period varied tremendously, from 29 days during February-March to 76 days in April-July.

The larva

The larva is to be found in the coastal area of the Eastern Cape on *Leucospermum* from late May onwards, and final instar examples have been recorded as late as the end of October. However, full-grown larvae have been observed on pine near Port Elizabeth in November, and newly-hatched individuals at Grahamstown from the last week of March. Men-

tion has already been made of the difficulty experienced in rearing larvae from the egg to maturity, especially on pine. All seemed to go well until the second moult, after which they commenced to die off in large numbers, with few surviving the third moult. The duration of the larval period varied, under insectary conditions, from 90 days (March-June) to 115 days (May-September).

The pupa

Pupation takes place in dry soil at or near the base of the host-plant or tree, at a depth of from one to two inches. As many as sixty pupae have been found within one foot of the base of an infested pine tree. No cocoon is formed, the larva pupating within its final skin which then splits longitudinally in the dorsal region. It remains in this stage for some 182 to 223 days (September-June), the earliest emergences taking place from the third week of March. Emergence is at its peak during May. In three individual cases emergence was delayed until the second year after pupation. Of 37 larvae which entered the soil for pupation from 28.9.1959 to 22.10.1959, 24 adults emerged from 25.3.1960 to 19.4.1960; 10 dead and 3 living pupae were found in the soil on 28.5.1960 (4 tachinid flies had emerged in November-December). The three remaining living pupae produced adults on 14.4.1961, 28.4.1961 and 17.5.1961, thus resulting in minimum pupal periods of 540, 554 and 573 days respectively. Although it is unlikely that pupae could survive so long under normal conditions, it does at least seem to indicate a potential survival power under extremely dry conditions. All the pupal periods referred to above were obtained under conditions of extreme dryness, the soil in which the pupae concerned were maintained in the insectary never being subject to moisture except for that in the atmosphere.

Natural enemies and controlling factors

Larval parasites of *capensis* recorded in the Eastern Cape are *Apantales maculitarsis* Cam. (Braconidae) and *Sericophoromyia amplipilosa* Curr. (Tachinidae). The cocoons of *Apantales* appear on larvae from the fourth instar, and as many as 26 have been counted on one host. The host may linger on for a few weeks after the parasitic cocoons appear but eventually dies. The tachinid emerges from the prepupa after the host has entered the soil. It is a well-known species, and has been recorded from several other lepidopterous hosts as well. Neither of these two species of parasite is sufficiently numerous to be effective in controlling *capensis*. More important and useful is *Mesocorys pulchriceps* Cam. (Chalcidae) which is often obtained from the egg, and which emerges over a period of ten months. Despite this, however, it cannot be said to exercise effective control. More recently, what may prove to be an efficient predator has appeared. This is the Cape Raven (*Corvultur albicollis* (Lath.). It occurs commonly throughout the George-Knysna area, and may be seen almost anywhere along the main road from Port Elizabeth to Cape Town where it has been quick to avail itself of the carcases of birds and small animals on the roads, the victims of modern traffic. These seldom remain lying long, thanks to the ravens. It has now been reported that they congregate in and near the pine plantations to feed upon the emerging moths. While such reports require confirmation, there seems to be little reason to doubt them.

Domestic pigs have for long been utilised for the control of *capensis* in pine planations where they feed upon the pupae and apparently are most effective (Tooke & Hubbard, *op. cit.*). Many growers still employ them while others prefer the areial application of insecticides.

Sometimes disease controls *capensis;* and this has been the case very recently (1966). The insect at the moment is said to be difficult to find in the George-Knysna area on account of disease.

Nudaurelia cytherea cytherea

From pupae derived from pine-reared material in the Eastern Transvaal in August 1957, adults emerged in Port Elizabeth from 22nd January 1958 until early in the following month. Eggs obtained from a pair retained for breeding purposes hatched in 22 days (February). Larvae were supplied with *Pinus radiata, Leucospermum ellipticum* and the leaves of guava. Those supplied with pine at first wandered about but later settled down to feed. However, they did not thrive and shortly afterwards died. The others, given *Leucospermum* and guava, fed readily from the start and growth was rapid. They commenced entering the soil for pupation early in April. The duration of the larval period for those fed on guava leaves varied from 47 to 49 days, with an average of 47·6 days for 11 larvae, while in the case of the *Leucospermum*-fed larvae, the period varied from 48 to 54 days, the average for 15 larvae being 50·3 days (17th February-12th April). The pupal periods for the two varied from 255 to 312 days in the case of *Leucospermum*-fed larvae and from 318 to 328 for the guava-fed individuals. One emergence from *Leucospermum*-fed material took place as early as December 17, but this was quite exceptional, and there were no further emergences until February 3. All the *Leucospermum* pupae had emerged by February 28, while the guava material emerged from February 13 to March 2. All the adults obtained were very light yellow in general colour, there being no variation whatsoever in this respect. Many adults of *capensis* are as light in colour, and an examination of the genitalia should determine whether a specific difference exists. It was possible to attempt the crossing of one pair only, a male *capensis* with a female *cytherea,* and although unsuccessful in that the few eggs obtained were infertile, nothing can be deduced therefrom. It was noticed, however, that the egg of *cytherea* is slightly smaller and more round in shape than that of *capensis.*

It was interesting to note that the period of activity of pine-feeding Grahamstown *capensis* coincided with that of *cytherea,* while the adults in colouring are often almost indistinguishable from those of the latter. Here, however, the resemblance ended, the egg of the Grahamstown moth being typical *capensis.*

Nudaurelia cytherea cytherea is now a well-known defoliator of *P. radiata* in the Transvaal and Swaziland, while a number of indigenous hosts has been recorded. A list of these has been supplied by Dr. J. H. Grobler (*pers. comm.*) as follows:—*Euclea* sp., *Myrica conifera* Burm., *Myrica* sp., *Rhus lucida* L., *Rhamnus prinoides* L'Hérit., *Myrsine* (*Rapanea*) *melanophloeos* R. Br.

Summary

An account is given of the biology of *Nudaurelia cytherea capensis* Stoll., in the Eastern Cape Province. Two biological strains apparently

occur, one coastal and the other inland. The extreme colour variation in the adult is not nutritive and is thought to be due to temperature and/or humidity conditions during the pupal period. *Capensis* is compared with the Transvaal form *Nudaurelia cytherea cytherea* Fabr., and it is thought that they belong to two distinct species, but further investigation is required in this respect.

ACKNOWLEDGMENTS

The writer is much indebted to the following for assistance in various ways and whose kind co-operation forwarded the investigations to a great extent:—Mr. G. A. Hepburn, formerly Forest Entomologist, as well as other former colleagues including Messrs. D. J. v.V. Webb, J. H. Grobler, W. A. Burger and the late H. J. Bishop. Thanks are also due to Prof. J. Berlioz and Mons. P. C. Rougeot, Muséum National d'Histoire Naturelle, Paris; Mrs. E. K. Mackintosh, formerly of the Port Elizabeth Museum; Mr. V. Moran, Rhodes University, Grahamstown; Dr. E. McC. Callan, formerly of Rhodes University and now of the C.S.I.R.O., Canberra, A.C.T., Australia; and last, but by no means least, Miss G. V. Britten, Albany Museum Herbarium, Grahamstown, for her ever willing assistance in naming plant material.

REFERENCES

Pictet, A. (1902). Revue Scientifique, Série 4, vol. 18, 293.

Tooke, F. G. G., & Hubbard, C. S. (1941). The Pine Tree Emperor Moth *Nudaurelia cytherea capensis* Stoll. Dept. Agric. & For. (Ent. Ser. No. 7). Sci. Bull. 210, Pretoria.

June in the South of France

By J. A. C. GREENWOOD, O.B.E., F.R.E.S., and DOROTHY GREENWOOD

We selected our area of operations with quite a lot of care. We wanted a comfortable, modern hotel on a good, sandy bathing beach, not too close to a large town and with as great an area of unspoilt country as possible. Le Rayol fitted this specification admirably. It is about 15 miles west of St. Tropez and roughly half that distance east of Le Lavandou. The hotel, Le Bailli du Suffren, was first-class. There is a superb beach outside the hotel and a small village on the main road a quarter of a mile away.

Between the hotel and the main road the disused railway line, which runs along the coast for many miles, could be entered, and proved a very fertile collecting area.

There was excellent open and wooded country on the way to St. Tropez. By turning inland at Le Lavandou a short but steep road leads to the hill-top village of Bormes and a few miles further on lies the magnificent Forêt de Dom stretching for many miles on either side of an excellent road. Another steep road, largely consisting of hairpin bends, leads up and through the hills to the town of Collobrières, famous for its marrons glacés and crystallised fruits.

Our collecting was concentrated in three main areas:—

(a) The disused railway.
(b) An area on either side of the main road, some 12 miles east of Le Rayol.
(c) The Forêt de Dom.

Superficially these areas had little in common, but many of the insects which we recorded were found in all three.

We noticed quite a substantial change in the insect population during the fortnight (31st May-13th June 1966), but throughout the period butterflies were very plentiful. The weather was perfect apart from one cloudy day and another misty morning. The rest of the time was hot, sunny and almost windless.

We followed the usual route, air to Nice, self-drive hire car to Le Rayol—a very attractive run soon after dawn; we arrived at the hotel at 8 a.m., and even as early as this there were plenty of butterflies about.

In the first few days we caught glimpses of *Nymphalis polychloros*, the large tortoiseshell, but were never sufficiently close to attempt a capture. However, at this stage, we were fortunate enough to find the special tree which served as the rendezvous for this species. This was a small and rather aged cork oak, slightly apart from the main area of trees and raised a few feet on a small hillock.

The *polychloros* congregated in this tree. The butterflies would fly to it from other trees and would settle on the leaves or on the bark. If disturbed they circled round the tree and, after a short flight, would generally return. It was relatively easy to capture a nice series.

We also found two wounded cork trees which were attractive restaurants for *Charaxes jasius*. On the smaller tree in the railway cutting near Le Rayol there were regularly two *jasius* feeding in company with a number of flies and beetles. The other tree, a very large one in the Forêt de Dom, had a wound about two feet from the ground. When we found this tree it was a delightful sight. There were four *jasius*, one *polychloros* and one *Vanessa atalanta* feeding in an area of a few square inches. I caught all six in one stroke and until I released them (except for a perfect male *jasius*) it seemed as though my net contained a flock of birds.

An unusual incident occurred when we were walking along a path in the Forêt de Dom. Suddenly a large Boarmid moth fell from a branch and landed struggling at my feet. On examination, I found a large yellow spider entwined amongst the moth's legs with its fangs embedded in the underneath of the thorax. I removed the spider, but the moth died within two minutes.

The magnificent larvae of *Celerio euphorbiae* L. (the spurge hawk) were quite common in all sizes from almost full fed to just hatched. The earlier instars, when the larva is vivid green, black and yellow, closely resemble the foodplant before it has aged. The later stages, when the colours are basically red and black, are relatively inconspicuous on the older food plant; nevertheless the female partner detected the first at long range. These larvae ate up voraciously and readily took to the ordinary "weed" spurge growing in our strawberry bed. We were very successful in breeding this moth as twelve larvae, ranging when found from almost full fed to very small, produced twelve moths. They pupated readily in plastic boxes lined with tissues and the pupae were placed on the surface of a bed of sterilised bird sand. They were sprayed twice daily and kept at a temperature of approximately 80°F. Pupation took place between 14th and 30th June. The first moth emerged on 16th August, all except one had emerged by 7th September, but the last lingered until 27th September.

We captured a female *C. jasius* on 12th June and decided to try to rear this splendid insect, the female of which is the largest European butterfly.

Three years previously I had planted a bush of the foodplant, *Arbutus unedo*, in the garden and on our return we sleeved the butterfly. By 16th June she had laid 12 eggs, but although she fed readily on a mixture of whisky, madeira and honey and survived until 6th July, no more were laid. Six ova were fertile and hatched on the 27th and 28th June. We had very little difficulty in rearing the larvae and five survived and pupated between 14th and 23rd August.

The larvae feed sporadically, usually at night, but very rapidly. When not feeding they returned to the upper side of a selected leaf on which a small carpet of silk had been spun. When full fed the larva is about 55 mm. in length when resting.

The pupa is suspended from the middle of the underside of a leaf and is a clear, pale green. Thirty-six hours before emergence, traces of purple are visible along the margins of the wing cases and a few hours before the imago leaves the case the whole pupa has darkened. The first imago emerged on 2nd September and the last, the only female, on 13th September.

One larva of *Hemaris tityus* L. (the narrow-bordered bee hawk) was found by D. F. G. on scabious, but prolonged searching did not result in any more being discovered. The moth emerged on 9th August.

Larvae of *Lasiocampa quercus* L., the oak eggar, were fairly frequent. We took three which spun up quite quickly, but the moths did not emerge until September/October. The other conspicuous larvae found abundantly were those of the gipsy moth (*Lymantria dispar* L.).

The following is a list of the 56 species of butterflies which we captured; moths were not numerous. Our thanks are due to Dr. de Worms and Mr. Bretherton for their help and advice. Dr. de Worms' article, *Easter on the French Riviera, April 1966* (*Ent. Rec.*, **88**: 192) deals with an area a little further west than our base, and covered a somewhat earlier period of the year; but it is interesting that we found a number of species which he had reported, still on the wing.

BUTTERFLIES CAPTURED LE RAYOL, 31ST MAY-13TH JUNE 1966

Lavatheria Lavatherae Esp.	A few, Railway and Forêt de Dom.
Pyrgus sidae Esp.	One, Forêt de Dom.
Pyrgus malvoides Elw and Edw.	Two, east of Le Rayol.
Pyrgus armoricanus Obth.	Very few, Forêt de Dom.
Adopaea flava Brunnich.	Numerous and widespread.
Thymelicus actaeon Rott.	Very numerous.
Ochlodes venata Brem. and Grey	Very numerous.
Papilio machaon Linn.	Generally frequent, especially later in stay.
Iphiclides podalirius Linn.	Few at end of stay.
Pieris brassicae Linn.	Fairly common generally.
Pieris rapae Linn.	Fairly common generally.
Pieris mannii Mayer	Few only.
Pieris napi Linn.	Common.
Aporia crataegi Linn.	Worn, but frequent Forêt de Dom only.
Pontia daplidice Linn.	Frequent, especially on Railway.
Euchloe ausonia Hbn.	Frequent, especially on Railway.
Leptidea sinapis Linn.	Very few, Forêt de Dom only.
Gonepteryx cleopatra Linn.	Fairly common.

Colias australis Vty.	A few, east of Le Rayol.
Colias croceus Fourer.	Becoming common, east of Le Rayol.
Charaxes jasius Linn.	Widespread and quite common.
Limenitis camilla Linn.	Numerous and widespread.
Vanessa atalanta Linn.	One, Railway; one, Forêt de Dom.
Vanessa cardui Linn.	Common.
Inachis io Linn.	One, Forêt de Dom.
Nymphalis polychloros Linn.	Plentiful, east of Le Rayol and Forêt de Dom. A few elsewhere.
Mellicta athalia Rott.	Abundant.
Melitaea phoebe Schiff.	Two worn, Railway.
Melitaea didyma Esp.	Abundant.
Argynnis paphia Linn.	A few, east of Le Rayol and Forêt de Dom.
Brenthis daphne Schiff.	Abundant
Clossiana euphrosyne Linn.	One worn, Railway
Clossiana dia Linn.	Fairly numerous, Railway and Forêt de Dom.
Issoria lathonia Linn.	A few, Forêt de Dom at end of stay.
Agapates galathea Linn.	Very abundant.
Agapates psyche Hbn.	Scarce and worn, east of Le Rayol and Forêt de Dom.
Brintesia circe Fab.	Very abundant.
Pararge aegeria Linn.	Fairly common generally.
Dira megera Linn.	Fairly common generally.
Dira maera Linn.	A few, on higher ground beyond Forêt de Dom.
Maniola jurtina Linn.	Abundant.
Pyronia cecilia Vall.	One, Railway; one, east of Le Rayol; one, Forêt de Dom.
Coenonympha pamphilus Linn.	Fairly common generally.
Coenonympha dorus Esp.	One, Forêt de Dom.
Strymon ilicis Esp.	Abundant.
Strymon esculi Hbn.	Abundant.
Strymon spini Schiff.	One, east of Le Rayol.
Lycaena phlaeas Linn.	A few in all areas.
Syntarucus pirithous Linn.	One, Railway.
Lycaenopsis argiolus Linn.	Common.
Glaucosyche alexis Poda	Two, Forêt de Dom
Aricia agestis Schiff.	A few in all areas.
Cyaniris semiargus Rott.	Scarce.
Polyommatus icarus Rott.	Common.
Lysandra bellargus Rott.	One, Forêt de Dom.
Lysandra hispana H.-S.	Worn, but numerous, Railway and Forêt de Dom.

CACTOBLASTIS CACTORUM BERG. A FURTHER NOTE.—Although the coloration of the larvae of *Cactoblastis cactorum* Berg. would seem to have a strongly deterrent effect on birds, it does not seem to deter the chacma baboon or the vervet monkey, both of which have been noted tearing open the infested segments of the prickly pear, and consuming the larvae with avidity.—J. SNEYD TAYLOR, Hilton, Natal.

Notes on the Microlepidoptera

By H. C. Huggins, F.R.E.S.

Acleris permutana Dup. I was very interested to read in the account of their Irish collecting by Messrs Mere and Pelham-Clinton (*Ent. Gaz.*, **17**: 163) of their capture of this species in the Burren in 1963 and 1964. In August 1964 I netted a specimen in the nearest part of the Burren to Ballynalackan Castle, on the slabs on the right-hand side of the road to Ballyvaughan before reaching the high rocks. It was freshly emerged, but unluckily I must have injured it in beating it out as half the right upper wing was gone. This locality is about fourteen miles from Newtown Castle, where Messrs Mere and Pelham-Clinton found theirs, and suggests that the moth is generally distributed over the Burren; from its sluggish habits it is, no doubt, usually overlooked.

My specimen was very small and bright, very like some bred ones from Brighton from the Farn collection given me by Robert Adkin, who told me that the locality on the chalk downs had long ago been destroyed. These moths were smaller and brighter than those those taken in some numbers on the sandhills in South Wales by Sheldon and Metcalfe in 1927-1928, which were like old Wallasey ones, larger and lighter buff. Barrett (**10**: 232), beside mentioning Beachy Head, gives the Irish localities as the Dublin and Galway coasts, and Beirne ('Microlepidoptera of Ireland', 86) quotes Galway coast and Dublin coast and also on the cliffs of Howth, but with some reserve.

Of these localities, the Galway one is no doubt the Galway part of the Burren and correct, and I see little reason why the moth may not still exist on the Dublin coast on any sandhills where the burnet rose grows. These are no doubt similar to the Welsh locality, where Sheldon and Metcalfe found it, and the very local snail *Helix pisana* Müller is common to both. *Pisana* is like *permutana*, a xerophile, and sandhills, limestone or chalk seem a necessity to it. The only person who ever found *pisana* in a wet place in Ireland was Mr. W. Andrews, who discovered it in Kerry in company with the amphibious *Succinea putris*, clinging to leaves of the yellow iris, but then Mr. Andrews also saw large coppers in that favoured country; I wonder whether he noticed any great auks on the coast?

Eucosma semifuscana Steph. This moth was common at Dingle in August 1966. I had not taken the trouble to record it before, but I see that Beirne (Op. cit. 94) does not give Kerry as a locality, so presumably this is a new county record, unless I have overlooked a recent one. The moth seems to be rather temperamental; a slight change in temperature which did not seem to affect other insects made all the difference to its flying. On August 12th there were between thirty and forty in the trap, the next two nights only one or two, and then a score or more for several days. This was not due to wind directions as they were coming from some sallows in the next garden.

This most variable and often pretty insect is somewhat disappointing; I have taken it from Horning and Dungeness in the east to Glengarriff and Dingle in the west and in each locality I have found practically every known British form and in none anything new. Even larvae collected on the slopes of the Caha mountains near Glengarriff produced the same range.

65 Westwood Boulevard, Westcliff-on-Sea, Essex. 28.xi.1966.

Switzerland 1966

By Dr R. G. Ainley

This summer I spent the period between 20th June and 3rd July in the village of Adelboden, at the head of a valley (Frutigental) in the Bernese Oberland. The village is surrounded by mountains with alpine meadows and a fair amount of forest, and is ideal country both for collecting Lepidoptera and for walking or climbing. The paucity of Lepidoptera recorded below is probably due largely to scarcity of sunshine, the weather tending to be dry but dull for much of the time.

21st June brought the first sunshine, a precious two hours in the morning. Climbing from Adelboden to Tschentenegg we encountered *Erebia oeme* Hbn., form *lugens* Hbn., at Hörnli (1493 metres), flying in large numbers in the alpine meadows, along with *Coenonympha arcania* L. and *Aphantopus hyperanthus* L. A few *Vanessa cardui* L., were seen, and we found a good colony of *Cupido minimus* Fuessl., the males past their best, but the females emerging, fresh and pairing.

The whole of 22nd June was hot and sunny, and we set out to walk due south towards Wildstrubel, an impressive peak which closes off the head of the valley. On the way we found large numbers of 'blues', mostly *Polyommatus icarus* Rott., *Cupido minimus* Fuessl. and *C. sebrus* Hbn., feeding at roadside middens. At the foot of Engstligenalp, on wooded slopes near the cable-car station, a few worn *Papilio machaon* L., were flying, with *Pieris bryoniae* Ochs. (all in poor condition), *P. napi* L., *Clossiana euphrosyne* L., and the moth *Parasemia plantaginis* L.

The cable-car took us up to Engstligenalp, a flat glacial basin where we found several large colonies of *Erebia pandrose* Bkh., their silver-grey handwings conspicuous in flight. Warren has remarked on the irregularity of flight in this species, with its curious "side-stepping" phenomenon. Another idiosyncrasy of flight I observed is the following. In situations where a sustained breeze blows up a slope, at right angles to its face, one frequently sees *pandrose* flying sideways, by facing the breeze, flapping its wings slowly, and "yawing" sideways along the slope, remaining "nose to wind" throughout. At this altitude (1955 metres) *Aglais urticae* L. was abundant, along with fair numbers of *Boloria pales* Schiff., *V. cardui* L. and *Coenonympha pamphilus* L.

23rd June began with bright sunshine and while climbing up Tschentenegg to the north of Adelboden, a few very fresh *Erebia epiphron* Knoch. were taken, flying in company with *Erebia oeme* Hbn., *C. arcania* L., and *A. hyperanthus* L. *Boloria pales* Schiff., was moderately common, and a worn female *Colias hyale* L. (or was it *australis* Vty.?) was taken for ova, but failed to lay any during the next three days. Vast numbers of the moth *Odezia atrata* L. were everywhere, and seemed to be larger than their British counterparts, with more pronounced white fringes at the tip of the forewing.

Dull weather prevailed until 26th June, when, at the foot of Engstligenalp, we found a few *Euchlöe ausonia* Hbn., a very dark form of *Mellicta athalia* Rott., and a single fresh specimen of *Euphydryas cynthia* Schiff. Another dull spell followed, to end on 30th June, when, on a fine hot morning, we found our first Swiss "coppers", *Palaeochrysophanus hippothöe* L., in a meadow on the outskirts of Adelboden. Fine weather continued, and on 1st July the lower slopes of the Bonderalp, to the east, proved productive. Here *hippothöe* was flying in moderate numbers,

mostly males in good condition; two other notable captures were *Aphantopus hyperanthus* L. ab. *caeca* Fuchs. and a solitary *Colias phicomone* Esp., the only one seen during the whole of this holiday.

The following list of species seen or taken omits *Hesperiidae* and moths. In view of the vagaries of the weather some of the estimates of frequency may be misleadingly low.

Papilio machaon L.	Few, only below Engstligenalp.
Pieris brassicae L.	Moderate numbers in valleys.
P. rapae L.	Few encountered.
P. napi L.	Common.
P. bryoniae Ochs.	Engstligenalp, Bonderalp. Local.
Euchloe ausonia Hbn.	Three only, Engstligenalp.
Anthocharis cardamines L.	Moderately common in valleys.
Colias phicomone Esp.	One only.
C. hyale L. (or *australis* Vty.)	Fairly common.
Vanessa cardui L.	Common.
Aglais urticae L.	Abundant in many localities.
Euphydryas cynthia Schiff.	One only, Engstligenalp.
Mellicta athalia Rott.	Locally common.
Argynnis aglaia L.	Uncommon but widespread.
Clossiana euphrosyne L.	Locally common in valleys.
Boloria pales Schiff.	Locally fairly common, alpine meadows.
Erebia epiphron Knoch.	Common on many slopes.
E. oeme Hbn.	Abundant on most slopes.
E. pandrose Bkh.	Common, rather local.
Aphantopus hyperanthus L.	Common everywhere.
Pararge aegeria L.	Common.
P. megera L.	Uncommon (flight over).
P. hiera Hbn.	Few seen.
P. maera L.	Very common.
Maniola jurtina L.	Common.
M. tithonus L.	Fairly common.
Coenonympha arcania L.	Abundant on many slopes.
C. pamphilus L.	Widespread, common.
Heodes dorilis Hufn.	Only one seen.
Lycaena phlaeas L.	Widespread, not common.
Palaeochrysophanus hippothöe L.	Locally, in moderate numbers.
Cupido minimus Fuessl.	Many colonies.
C. sebrus Hbn.	In valleys, local, fairly common.
Polyommatus icarus Rott.	Widespread, but in small numbers.

27 Meadow Close, Stretford, Manchester. 12.xi.66.

ON MR. WEBB'S QUESTIONS AND IDEALS OF DUTY TOWARDS CONSERVATION.

Mr. Webb's interest in conservation as opposed to the pure amassing of a collection is most welcome, but in common with the Editor, who has made some sound points in reply, I must express reservations on Mr. Webb's approach (*Ent. Rec.*, **78**: 236).

Lepidoptera, particularly the butterflies, must be one of the best studied groups of insects, and speaking as a non-lepidopterist, it certainly seems extraordinary if, with our limited British fauna, we cannot answer some of Mr. Webb's questions. Some of his questions are a matter for straightforward observation and it seems quite possible that the answers are known but perhaps not published. Other questions raise more complex issues, such as that of fluctuations in abundance. Such aspects would require detailed study, but even here observation and recording can achieve a great deal.

To publish may not seem important at the time an observation is made, but it is the accumulation of fact which can lead to a better knowledge of the biology of an insect. Mr. Webb is of course right that knowledge is essential in order to conserve our insect fauna.

Having located one of the chief obstacles to constructive conservation—our lack of knowledge of biology and ecology of insects, as well as repeating the often heard lament about 'well publicised' man-made factors—I am somewhat disappointed in one of Mr. Webb's main remedies, in fact a duty, to release perfect insects. The mere ceasation of collecting will not save a species, though it might help some very local rarities, and strong reservations must be expressed about releasing bred insects. It is not clear from his letter where the perfect insects are to come from nor where they are to be released, and presumably one's duty should be to release as many as possible as indicated by 'at least five'.

The release of bred strock outside the immediate locality from which it originated must raise serious objections. This must particularly be the case where colonies of an insect have built up a unique genetic constitution, at subspecies level or even below. To introduce 'foreign' genetic types into such a colony would contaminate it and render it useless for serious study. The aim may be to conserve the local colony, but at what price? If a colony or larger group have developed a readily recognisable character, one may be able to recognise the risk. But what of a population which does not display unique morphological features—may it not have a genetic constitution physiologically adapted to a given locality which could be unbalanced by the introduction of a different stock. There are few collectors who have the opportunity of returning the insects to their original source; most will find it simpler to release them at a more convenient location. In many species of lepidoptera the females lose the inclination to pair after a few days, yet many entomologists can travel into the field only at week-ends.

As an emergency measure it may be desirable to breed a rarity and then release it in its original locality. This, after all, is a policy already recognised by zoos, and one may quote the classic case of the Hawaiian Goose in which the Wildfowl Trust played a major part. However, even this policy has its dangers, particularly with rapid breeders such as insects. Besides the problems of inbreeding, it is theoretically possible to weaken the strain, since if one were to get 100% rearing success the normal processes of natural selection will not have been exerted but if, as is likely, some mortality occurs, this will probably be due to different factors from those occurring in a natural population.

There is also the temptation to try to establish a species in a new locality or simply giving surplus stock its freedom in a haphazard manner. This is likely to cause much confusion to distribution records, particularly

if the release is not published. One also needs to be wary of the often unpredictable consequences for the existing fauna and flora.

The release of specimens may artificially obscure the true breeding status of a species so that one may be unable to tell whether it is maintaining a satisfactory natural breeding status or not. This applies particularly to the release of large numbers of bred stock, especially since bred specimens often emerge earlier than those in the wild, and short of marking the released specimens, it may become impossible to tell whether any wild specimens were present. This in any case may only be a short term measure since the species may quickly return to a low ebb when artificial stocking ceases.

One cannot help but feel, that however low a population may be, providing it is not over collected, it will be in balance with its environment, and may in fact be the largest population the habitat can support. The introduction of further stock can only upset this balance, if it should exist. Competition may be raised, at least temporarily, to a detrimental level and may enable a burst of success by parasites and a corresponding crash in the number of hosts to a level from which they cannot recover.

Mr. Webb's ready acceptance of 'well publicised' causes for 'the present parlous state of lepidoptera' is also unwise if one is to seriously consider conservation. It is not clear what is to be put under this heading, but many of the causes are perhaps more correctly described as theories, with toxic chemicals and the British weather being readily adopted as scapegoats for causes. We learn that toxic chemicals have managed to reach the most remote and unlikely places and that these contaminants have built up in predatory birds such as the Peregrine Falcon and are strongly suspected of being the cause of infertility and abnormal behaviour. It seems reasonable to suppose that some effect must be felt by the insect population, against whom many of these chemicals are designed, but how much research and observation has been given to these problems? I think it is reasonable to suggest that it is a negligible amount relative to the size of the problem. Numbers of some species of insect continue to fluctuate, we still have 'good' years—and if one looks through old field meeting reports one finds that there were pretty 'bad' years in the days before toxic chemicals, and no species of insects appear to have become extinct specifically due to this cause. Entomologists have generally failed to record the case against toxic chemicals.

And what of the British weather? It is certainly important, but how important? The problem can be tackled to a great extent by observation and recording those observations. It may be relevant, for instance, that a late hard frost was recorded at the chief locality for the very local Lake District *masseyi* race of the Silver-studded Blue, a race of butterfly which has not been seen since. The weather may be a major factor in the susceptibility of an insect to fungus or disease. The number of possibilities is immense. One must also remember that the foodplant of phytophagous insects is controlled by numerous factors including climate. I am not sure that the inferences are correct, but I consider that the crash in numbers of the Fritillary butterflies on Bookham Common, Surrey, in the late 1950's coincided, with a severe reduction in violets one winter.

In many cases the increasing rarity of species can be justly blamed on the increasing scarcity of suitable habitats, such as with the Large Blue, and this is suspected to be the primary factor resulting in the extinction

of the Large Copper in the days well before toxic chemicals. The habitats may be totally destroyed or reduced by the ceaseless competition for land. But one must appreciate that even if a piece of land remains wild, the vegetation is often changing and may become less suitable or completely unsuitable for a species. As a result it is often management of these areas which is needed to maintain the habitat in the optimum condition to support an optimum population of the chosen species. This is where the need for knowledge of the biology and ecology of insects is really needed and that observation and records become of real value to conservation. Also, all too often, where there is an opportunity to manage an area, there is a great lack of information on what insects are present and which species are worth special conservation effort. The result is that a nature reserve or other area tends to be managed to keep the botanists and ornithologists content—the insects are assumed to be able to jog along happily, but this negative attitude can be disastrous to entomological interests.

Mr. Webb suggested that the declared policy of the *Entomologist's Record* should include conservation. The appeal by the Entomological Society for restraint in collecting certain lepidoptera shows that the day has come when entomologists must accept a duty towards positive action and not merely the negative action of not collecting. A publication such as the *Record* can only publish the material offered to it, and it is therefore the readers who must contribute and so dictate such a policy. Meanwhile the present policy of placing on record original observations and distribution and locality records is all helping on the long road to conservation. What is needed is the adoption of a more positive approach by entomologists in not only making, but also recording, observations useful in this field.

A. E. Stubbs, 91 Clitherow Avenue, Hanwell, W.7. 25.x.1966.

Diptera on Thursley Common, Surrey, in 1966

By P. J. Chandler

During two visits to Thursley Common, Surrey, on 28th May and 27th July 1966, on both occasions with Mr. C. O. Hammond and Mr. A. E. Stubbs, a number of rare and uncommon Diptera were taken. The common is an extensive area of heathland and pinewood with a large bog. Several interesting species occurred on the sunlit paths through the heathland, especially on the earlier date, but the most productive area was in the vicinity of rhododendrons and old pines by a pond on the east side of the common. The bog was very unproductive of insects but certain species were found only there, e.g. *Dolichopus atripes* Mg. and *D. atratus* Mg. (Dolichopodidae), both of which were abundant on 27th July; *D. atripes* appeared to be confined to the margin of the bog, while *D. atratus* was only found some distance into it; with the latter occurred *D. vitripennis* Mg. which was also taken at Moat Pond by Mr. Stubbs.

On the sandy paths, *Metopia leucocephala* Rossi (Calliphoridae) and *Lasiopogon cinctus* F. (Asilidae) were abundant in May. Also in May, a male *Aphria longirostris* Mg. (Tachinidae) was taken at rest on the sand. This fly is said to be locally common by van Emden (1954, *Royal*

Ent. Soc. Lond., Handb. Ident. Brit. Ins., **10** (4a), 47), who records it from Farley Downs and the New Forest, Hants; Studland (common), Hamworthy Marshes, Dorset; Cornwall. There are, however, two specimens in the British Museum collection from Surrey, both from the R. H. Meade collection (received by the Museum in 1955) and taken by T. R. Billups (Oxshott, 6.iv.1893; Boxhill, 12.viii.93). As the localities indicate it is not confined to heathland, occurring also on chalk downland. In July the large black Tachinid *Echinomyia grossa* L. was seen flying along a path on the heath, and was taken by Mr. C. O. Hammond. This distinctive fly is rarely found, but possibly is sometimes overlooked owing to its similarity to a bee when in flight. I took one at Durr Hill Down at the edge of the New Forest, feeding at a bramble flower on 11th August 1963. *E. grossa* has been reared from several species of large lepidopterous larvae belonging to the families Sphingidae, Lymantriidae and Lasiocampidae. Another Tachinid in July was *Prosena siberita* F., a characteristic pinewood species; one was found entangled in a spider's web on heather.

In the area by the pond referred to above, most of the uncommon species found either have aquatic or lignicolous larvae, the former presumably breeding in the pond, the latter in the dead and dying pines. On 28th May there were several *Sericomyia lappona* L. resting on the sunlit rhododendrons by the pond: one *Criorrhina floccosa* Mg. was also seen (Syrphidae). On an old partly-dead pine several females of the striking fly *Xylophagus ater* Mg. (Xylophagidae) were flying up and down the trunk. According to Verrall (1909, *British Flies*, V) the larvae occur most often in beech wood with *Pyrochroa* larvae on which they feed, but also in pine, oak and aspen wood. However it is not an exclusive association with *Pyrochroa* as J. A. Downes (1953, *Ent. mon. Mag.*, **89** 136-7) records it as feeding on a small unidentified Staphylinid larva, in Scottish localities, where no *Pyrochroa* have been found. It is very infrequent in England, being recorded from the New Forest, Devon and Hereford by Verrall; there are also two specimens in the British Museum from High Meadow Woods in the Forest of Dean; there are no previous records from Surrey. It is apparently locally frequent in Scotland. On the same pine trunk a male of the rare Syrphid *Brachypalpus bimaculatus* Macq. was taken by Mr. C. O. Hammond. He also caught another wood-feeding Syrphid *Brachyopa scutellaris* Desv., a female, on the nearby foliage of a rhododendron.

On a hedge at the edge of the common, near the pond mentioned above, a female of the fine Conopid *Conops vesicularis* L. was taken while flying along the top. This species is rare and local, mostly recorded from old woodland in S. England but extending to Yorkshire and Cheshire. The only previous record for Surrey given by Smith (1959, *Trans. Soc. Brit. Ent.*, vol. 13, part 7) is Bagshot, 25.v.1920, taken by E. B. Ashby. Mr. Hammond said he used to find it in Tilgate Forest, Sussex, but had not seen it for many years.

The Chironomid *Tanypus vilipennis* Kieffer was swept from the same hedge—a female. It is very little known in Britain the only specimens previously taken being in the British Museum collection:—Castle Howard, Yorks., 3.vii.1926 (F. W. Edwards); Yarnton, Oxon., 23.v.21 (? coll.); Helton Tarn, Witherslack, Westmorland, 11.vi.55 (D. Bryce); 2 specimens without data—1 ex. coll. Stephens, the other labelled 'England' (Walker). It is very distinct in the wing-markings from the only other British species,

T. punctipennis Mg., which I have found by the river Darent near Horton Kirby in Kent; the blackened cross-veins and conspicuous black streak on vein M before the cross-veins, in *vilipennis*, are characteristic.

On 27th July the same pond was again visited and further uncommon flies were taken. On the rhododendrons were *Xylota tarda* Mg. (Syrphidae) and *Oxycera formosa* Mg. (Stratiomyidae). The latter is very local, being recorded by Verrall (1909, *British Flies*, V) from eleven localities in nine counties in S. England and S. Wales, including one locality in Surrey, 'near Reigate', where it is probably now extinct. The nearest locality given by Verrall, however, is Woolmer Forest, Hants., only a few miles away, so it may still be widespread in this area. It is a distinctive little yellow and black species. *X. tarda* is common in Scotland but very uncommon in S. England, although widely dstributed.

By a small stream flowing into the pond *Asteia amoena* Mg. Asteidae) was swept. On the foliage of *Calystegia sepium* (L.) R. Br. covering a fence above the stream *Argyra argentina* Mg. (Dolichopodidae) was numerous. Also on the sunlight foliage two uncommon Muscids were found. One male of *Coenosia distinguens* Collin was taken; this is a very small grey fly which was running rapidly over the bindweed leaves. There are only five specimens in the British Museum collection, two from Scotland (Inverness, Sutherland), one from the New Forest (Matley Bog) and two captured at Tunbridge Wells in July 1928 by Col. C. G. Nurse. There were numerous males of *Spilogona denigrata* Mg. on the bindweed leaves and other nearby foliage. Specimens of this in the British Museum are from Scotland, where it appears to be generally distributed (Perth, Aberdeen, Dumbarton, Arran), Westmorland, Devon (West Dunsford, 9.vii.1883, G. H. Verrall), and Cheshire (Bowdon, 8.vi.1875), so that its distribution would appear to be typical of a 'Scottish' species, i.e. extending down the western side of Britain to Devon. The specimens of *C. distinguens* and *S. denigrata* were kindly determined by Mr. A. C. Pont, and the former and one male of the latter have been presented to the British Museum.

A male and female of another species of *Spilogona*, *S. surda* Zett. were swept from heather elsewhere on the common. Further interesting species were taken by Mr. A. E. Stubbs while sweeping sedges at the margin of another pond on 27th July. These included the Scatophagid *Cnemopogon apicalis* Mg., which Collin (*Trans. Soc. Brit. Ent.*, vol. 13, part 3) recorded from six English counties, not including Surrey. Mr Stubbs has also caught this at Wicken Fen, Cambs., 20.vi.65, another county additional to Collin's list. Amongst the same sedges he also caught *Dixa (Paradixa) amphibia* Deg. (one female); this is recorded by Freeman (1951, Royal Ent. Soc. Lond., *Handb. Ident. Brit. Ins.*, **9** (2), 100) from only four counties:— Inverness, Yorks., Hunts. and Somerset. Also taken by Mr. Stubbs was *Dicranomyia lucida* de Meijere (Tipulidae), a species said to be uncommon on bogs, which he swept by a pond on 27th July (one female), together wth *Tipula maxima* Poda.

The common is managed as a nature reserve by the Surrey Naturalists Trust by agreement with the owners. The Dipterous fauna alone would justify this status, and further visits will no doubt be equally successful.

85 Chatterton Road, Bromley, Kent.

A Note on *Limnia paludicola* Elberg (Dipt., Sciomyzidae)

By L. N. Kidd

In a recent paper on the Sciomyzidae (*Ent. Record*, **78**: 227-230), Mr. J. E. Collin has referred to the species described by Elberg in 1965 (*Entomologicheskoye Obozreniye*, **44**: 189-198) as *Limnia paludicola*. He points out that on dissecting the genitalia of several specimens of *Limnia* he found that each of the seven examined had a different arrangement of the small differences considered by Elberg to be of specific importance. In view of this he found it impossible to accept *L. paludicola* as a distinct species from *L. unguicornis* Scop.

Prior to reading Mr. Collin's comments I had been prompted by Dr. Knutson's outline of a Handbook of British Sciomyzidae to look over some of the males of *L. unguicornis* at Werneth Park Museum, Oldham, and in the collection at the Manchester Museum. Some half dozen males were dissected and the genitalia examined in glycerine. The conclusion drawn was that two males taken at Stoke St. Gregory, Somerset, on 8.viii.1934 by H. Britten were *L. unguicornis* the rest agreeing fairly well with Dr. Knutson's figure of *L. paludicola* Elberg. These latter specimens were as follows:—Oxford: Hogley Bog, one male, 11.viii.1915, A. H. Hamm; Westmorland: Hale, one male, 21.vi.1929 H. Britten; Yorkshire: Askham Bog, two males, 11.vii.1954, L. N. Kidd. The genitalia of the latter seem to be fairly constant in form and be reasonably distinct from the *L. unguicornis* examined.

From Mr. Collin's observations it would appear that there is some variation in the form of the genitalia of *L. unguicornis* and it may well be that this variation is such that *L. paludicola* will have to be sunk as a synonym of *unguicornis* as already recommended by Mr. Collin. However, Dr. Knutson informs me that he has been satisfied with his own determinations of both *L. unguicornis* and *L. paludicola*, and that Verbeke also seems to have accepted Elberg's species.

It would appear therefore that a careful study of the variation in a large series is probably desirable before removing *paludicola* from our list. I should be very pleased to dissect and examine any males of the genus *Limnia* which collectors may care to send on to me. May I take this opportunity of thanking Dr. L. V. Knutson for his kind help in this matter, and Mr. Allan Brindle for the opportunity of examining the collections at Manchester Museum.

Werneth Park Study Centre and Natural History Museum, Oldham, Lancs.

24.xi.1966.

COMMENT ON THE ABOVE NOTE

The above note is about a supposed new species included under the name of the common species *Limnia unguicornis*, distinguished only by slight differences in certain parts of its male genitalia.

It is a recognized fact by all students of genital characters, that small differences, *within the range of normal variation*, must be expected, especially in the case of differences *in certain parts* only of its genitalia. Normal variation of course includes cases in which practically no differences can be noted, and cases in which the differences are very variable.

To me it appears obvious that *paludicola* Elb. cannot be considered a distinct species.—J. E. Collin.

Notes and Observations

THE ABUNDANCE OF CELASTRINA ARGIOLUS L. NEAR LONDON IN 1966.—Having read Mr. Syme's interesting article on *C. argiolus*, the Holly Blue (1956, *Ent. Rec.*, **77**: 219-221), I had supposed his experience of its recent decline in at least his part of Hampshire to reflect more or less what was happening over the whole country to this charming little insect which used to enliven our gardens, lanes and woods almost everywhere, I believe—certainly near London and other large towns. It is all the more gratifying, therefore, to be able to report a massive recovery of the species in this part of the suburban area during the season just past. It was, of course common in this district long ago, and on and off up to perhaps the early 1950's—my opportunities for observing it were then fewer—but thereafter it began to share in the general scarcity that has overtaken so many species; so that the number seen in any year seldom exceeded two or three, at all events of late. In the whole of 1965 I saw only one, or possibly two; a cold snap in the latter half of May, following a warm spell, can hardly have favoured the insect. It is thus difficult to account for the sudden appearance of relatively large numbers in 1966. Both broods flourished equally, and the butterfly could be seen in the garden on any reasonably fine day during its periods, often two at a time and repeatedly—in fact just as in its former heyday—and the specimens seemed well up to size. I can personally speak only for my own area, but have little doubt that *argiolus* must have gladdened the eyes of many another naturalist in the suburbs with its unaccustomed plenty this year; Mr. Dudley Collins tells me it was more than usually frequent in his area also (Carshalton Beeches, Surrey). On 2nd May I watched two males fluttering low over a woodland path on Esher Common in the same county. They appeared intent on something on the ground, but I could not see what was attracting them. One soon made off and was lost to view; but the other persisted for some time in its very deliberate exploration of the path, often settling, but only for a few seconds and quickly moving on.

Of course, this welcome 'outburst' is no guarantee of a lasting recovery, or even of another good season to follow. In fact it is my general experience with insects that a year of exceptional abundance for a species, when the increase is sudden, is followed more often than not, by one of scarcity. I shall be interested to see how *argiolus* fares here next year. There is plenty of ivy, but only a small proportion produces flowers; and a good deal of holly, but (though it flowers well) few berries in any recent year. A high beech hedge in my garden has been a favourite resort of the butterflies. I would agree with Mr. Symes that they are not as a rule much interested in flowers, apart from those of holly; but I noted several second-brood examples at blackberry blossoms, and a few at those of golden-rod (*Solidago canadensis*).—A. A. ALLEN, 63 Blackheath Park, S.E.3. 15.xii.66.

MOMPHA RASCHKIELLA ZELL. (LEP.: TINEINA) IN PERTHSHIRE.—In early September I was collecting micro-lepidoptera in Glen Brerachan, Strathardle, Perthshire. Here I found the mines of *M. raschkiella* in the leaves of *Chamaenerion angustifolium*.—S. C. S. BROWN, 158 Harewood Avenue, Bournemouth, Hants. 22.xi.1966.

OBSERVATIONS ON FAMILY SPHINGIDAE FOUND AROUND CAPE TOWN.—Mr. O'Hefferan, in his notes under the above title (1966, *Ent. Rec.*, **78**: 212), does not mention the colour form of the larvae of *Acherontia atropos*, whose pre-pupational behaviour he describes. I have found that whilst the green and yellow forms remain on their food-plant during the day, the brown form feeds at night and hides during the day under clods of earth, etc., near the food-plant. If his 'abnormal' larvae were brown, their behaviour before the final burying would be the usual one—cease feeding at, or shortly after dawn and then concealment until the evening. Incidentally the brown larvae of *Herse convolvuli* L. also feed at night and hide themselves by day, and I strongly suspect the brown form of *Coelonia fulvinotata* Btlr. behaves in the same way. One of the usual foodplants of *atropos* in E. Africa, as well as of *lachesis* and *styx* in India, is *Jasminum* spp. belonging to the same family—Oleaceae—as Privet.

As a matter of interest I give below recorded food-plants of *atropos*, from which it will be seen that the accepted English idea of its being a potato feeder is far from correct.

> *Solanum, Datura, Physalis, Withania* (Solanaceae), *Lantana, Duranta, Clerodendron, Verbena* (Verbenaceae), *Schrebera alata, Jasminum* (Oleaceae), *Bignonia, Tecoma, Spathodea, Tecomaria* (Bignoniaceae), *Gossypium* (Malvaceae), *Ipomoea batatas* (Convolvulaceae), *Sesamum* (Pedaliaceae), *Hoslundia, Salvia, Pogostemon cablin* (Labiatae).

As regards *Temnora pseudopylas* Roths., I have bred this in fair numbers on *Pentas coccinea* (Rubiaceae). The larva does not have a Choerocampine ocellus, but it does have an elongate yellow spot laterally on the third somite.—D. G. SEVASTOPULO, F.R.E.S., Mombasa. 5.xi.66.

CONFIRMED OCCURRENCE OF OEGOCONIA DEAURATELLA H.-S. AND O. QUADRIPUNCTA HAW. (LEP.: SYMMOCIDAE) IN KENT.—With reference to Mr. P. Goddard's interesting account of these species (*Ent. Rec.*, **78**: 243-5), I have four *Oegoconia* ♂♂ from Kent as follows:—(1) *O. deauratelia* H.-S., St. Margaret's-at-Cliffe, 17.viii.1963; (2) *O. deauratella*, Dungeness, 23.vii.1963, (3) *O. quadripunta* Haw., Elmer's End, 20.viii.1958, at rest on a fence; (4) *O. quadripuncta*, West Wickham, 20.viii.1966, at electric light. The Dungeness *Oegoconia* was among a swarm fluttering at the onset of dusk over a dwarf broom. I gained the impression that they were assembling, but did not observe long enough to ascertain whether this was so. The specimens were mostly in very fine condition, and appeared to have emerged that day. The night of 23.vii.1963 at Dungeness was windless warm and overcast. I have to thank Dr. L. Gozmany, of the Magyar Nemzeti Museum, Budapest, for kindly undertaking determinations.—J. M. CHALMERS-HUNT, St. Teresa, Hardcourts Close, West Wickham, Kent. 18.xi.1966.

VOLUCELLA ZONARIA PODA (DIPTERA: SYRPHIDAE) IN WOOD GRREN, LONDON. —As Volucella zonaria is a notorious wanderer, many entomologists have come across single specimens in recent years but records of its continued presence in a locality are few. Previous to 1964 it could be taken regularly at Cranford Park, Middlesex, but the motorway completely wrecked the shrubbery where it was always found.

My first encounter with the species in Wood Green was at Scout Park, where a specimen was feeding on thistle on 4th August 1960. Subsequent

visits enabled three females to be taken on golden rod and others observed till 17th August. In October 1965 a schoolboy brought me a specimen taken on ivy-blossom in his garden near Bowes Park station, and, on being informed of the interest taken in this insect he kept a watch in 1966. He was rewarded when females visited the ivy-blossom on 17th September commonly enough for five females to be taken and others observed in the next two days. No males turned up but I had a male brought me taken in a garage adjoining Scout Park on 26th June 1966.

The recent visit gave me the opportunity of attempting to photograph this lovely Syrphid and I was surprised that the camera could be brought to within four inches of the insect without scaring it away. The same cannot be said of *V. inanis* or *V. pellucens* for one is lucky to be able to approach nearer than a foot in either case.

The flight of *V. zonaria* closely resembles that of the hornet which it mimics, flying leisurely and often keeping a straight course for quite a distance.—C. O. Hammond, 34 Passmore Gdns., London, N.11.

Three Late Larvae.—On 24th October I was working in my garden when I inadvertantly stepped on a larva as it was crossing a path in my orchard. Examination of the squashed remains showed it to have been a three parts grown larva of *Cherocampa elpenor* L. (large elephant hawk). There is plenty of *Epilobium roseum*, pedicelled willow-herb growing in the garden, and no doubt it had been feeding on this, but the date seems to be an extraordinarily late one for the larva of this species to be about.

On 10th December I was out shooting on Salisbury Plain near Warminster when I noticed a full-fed larva of *Macrothylacia rubi* L. (fox moth) at rest on a tuft of grass. The larva proved to be very much alive as it immediately rolled up into a ring when I handled it. The day was stormy and wet, with no sign of sun, which makes the occurrence even more unusual. In September and early October the larva was particularly common on this part of the plain.

Finally, to complete the trio, one of a small number of larvae *Apatura iris* L. (the purple emperor) that I am rearing for subsequent liberation in Blackmore Copse Reserve, only took up its final winter quarters on 5th December. All the others had settled down to hibernate in forks of the sallow bush on which they are sleeved in October and early November.—Major General C. G. Lipscomb, Crockerton House, nr. Warminster, Wilts. 11.xii.1966.

A Scottish Variety in Cambridgeshire.--I have, now that winter has come on, had some time to inspect more closely specimens taken at my mercury vapour trap in the garden here this year which I wish to include in my collection. On examining closely for the first time a very dark specimen of *Triphaena comes* Hübn. (the lesser yellow underwing) taken on the night of 22nd July, I find that it exactly resembles figure 8, plate 45, Vol. I of the early edition of South's "Moths of the British Isles"; in fact it *is* var. *curtisii*.

I can find no record of this variety ever having been taken outside Scotland, so I am puzzled as to how it turned up in Cambridgeshire; it is in perfect condition and the only explanation I can think of is that it was brought to the south as a larva with a consignment of Scotch seed potatoes. Has anyone in recent years recorded this variety south of the border?—Rev. Guy A. Ford, Balsham Rectory, Balsham, Cambridge. 8.xii.1966.

SOME 1966 REORDS OF VANESSA CARDUI L. AND V. ATALANTA L.—*V. cardui.* The first undoubted immigrants I encountered this year were two worn individuals in a grassy field near Nymphsfield, Gloucestershire, on 29th May. The next morning, in the course of 90 minutes, I counted eight flying singly due east over the escarpment in the region of the Uley Monument, near Nymphsfield, which overlooks the Vale of Berkeley. They appeared to have flown north-east up the Severn valley. The only others I have seen this year in Britain were one at Cadbury Camp, North Somerset, on 8th June, and a very faded example on Studland Heath, Dorset, on 22nd June.

V. atalanta. I watched a rather worn female on 19th June, ovipositing on stinging nettles near my home at Pill, N. Somerset, which was presumably an immigrant. The home-bred generation was plentiful in North Somerset from 5th September up to the 26th September, when I left England for a month's stay in France. On the 17th of that month I saw up to seven on ice-plants, Michaelmas daisies and rotten apples in my garden and that of a neighbour.

In the course of a day visit to the Black Mountains in Breconshire on 20th September, I saw an *atalanta* fly west over the escarpment at Hay Bluff (2,219 ft.) and another flying south-east down the Grwyne Fawr stream. Incidently, the new Severn Bridge has certainly opened up Wales to naturalists in the Bristol area; within an hour of leaving Bristol by car one can be in the heart of the Black Mountains.—J. F. BURTON, B.B.C. Natural History Unit, Broadcasting House, Bristol 8. 25.xi.66.

THE WOOD WHITE (LEPTIDIA SINAPIS) IN WESSEX—On 25th October I received a letter on this subject from Capt. K. J. Hayward in Argentina. He writes: "I collected assiduously around Bruton from about 1905 onwards till I went to Egypt in 1913, and again for a few months after the war. I only saw a wood white on one occasion, when I was walking to Creech Hill. A single specimen flew across a field, but I was never able to locate the place from which it originated, probably some small field-corner copse. The specimen is probably in the B.M. collection as my butterflies went there in (I think) 1922.

Mr. Littleton C. Powys, who was a master at King's School, Bruton, when I was there and before going to Sherborne mentions a colony of *sinapis* quite close to Sherborne in his two books, 'The Joy of it' and 'Still the Joy of it', but he never disclosed the exact spot". Mr. Powys was my informant, too.—H. SYMES, 52 Lowther Road, Bournemouth, Hants. 1.xi.1966.

MERCURY VAPOUR TRAPS.—For those like myself who run their mercury vapour light traps from dusk to dawn, some hints on keeping moths safe from predators might be useful in view of the editor's remarks in the October issue.

I find it best to keep the whole catch, except for those few willing to fly off on inspection, until the following night. About an hour after darkness has fallen, all that are going to fly away have done so, and one can then light up again. Care must be taken to collect those around the trap that have no protective concealment and put them inside. The trapper should be up at dawn or very soon after to do this very essential task before any birds arrive. The trap should be stored in a cool place

during the day. Also, beware the wasp—it has an enormous appetite, and spiders too are apt to take their toll.

For those who run their traps in the garden I recommend siting it in a shed, lobby or other suitable place under cover. I find the catch is as good as leaving it out in the open. Providing all reasonable precautions are taken, I find that the casualty rate is a very small percentage of the total catch.—TREVOR SILCOCKS, "Bryher", Kenmeade Close, Shipham, Somerset. 27.x.1966.

MIGRANT LEPIDOPTERA IN GLAMORGANSHIRE—The following species were recorded in the Swansea district during 1966. Single specimens except where otherwise stated:—

Leucania unipuncta Haw. (46) Bishopston, Sept. 17-28 (20) Oct. 2; Swansea, Sept. 18-28 (20) Oct. 2, 5; Oxwich, Sept. 18; Black Pill, Sept. 19; Llethrid, Oct. 19.

Laphygma exigua Hübn. Swansea, May 4, 30, June 1, 7, 17; Oxwich, June 5; Bishopston, June 6, 9, 15.

Rhodometra sacraria L. Bishopston, Sept. 18 (2) 19.

Nycterosea obstipata Fab. Swansea, Oct. 4.

In addition the following commoner migrants were noted (numbers approximate):—*Vanessa atalanta* L., 50; *V. cardui* L., 40; *Colias crocea* Fourch., 3; *Plusia gamma* L., 5,000 (1,000 at mercury vapour light, Swansea, June 10; 500 at m.v. Bishopston, Sept. 2); *Nomophila noctuella* Schiff., 50; *Phlyctania martialis* Guen., 15.—P. M. OVENDEN, M. J. COPLAND, A. A. MYERS, Dept. of Zoology, University College of Swansea. 25.x.1966.

Current Notes

LEPIDOPTERA COURSE AT PORTLAND BIRD SANCTUARY.—Under the auspices of the Dorset Naturalists' Trust, week-end courses for ornithologists have been held during 1965 and 1966 at the Old Lower Light, Portland.

A lepidoptera course is being arranged for 9th-11th June 1967, and will be taken by Mr. P. A. Goddard. The fee is three guineas, and bookings should be made with the Warden, The Portland Bird Observatory, Old Lower Light, Portland, Dorset.

The accommdation is not luxurious, but it is quite adequate. Visitors must bring sheets or sleeping bags, pillow case, towel, indoor shoes (hob-nailed boots are not suitable wear for walking about the Observatory floors) and stout all-weather clothing. It will be necessary to share rooms.

Portland is a good place for butterflies and moths, and there is always a chance that some rare immigrant may come to the Observatory light. Entomologists who are also interested in Botany will find much to attract them at Portland.

Current Literature

Pests of Stored Products. By **J. W. Munro.** 234 pp. with coloured frontispiece. Hutchinson of London (The Rentokil Library). 42/- in U.K. only.

The author, for thirty years Professor of Zoology and Applied Entomology at the Imperial College of Science and Technology, London University, states in his foreword that this may be the last occasion when this subject may be treated under one cover, for as our knowledge of the

subject increases, the tendency is to specialise more and more. He has wisely tapped as many sources of information as practicable, and has welded his harvest from these sources into a most interesting and useful book.

In the introduction the author traces the subject of infestation from the presence of the remains of a flour beetle in an Egyptian tomb of the 6th Dynasty (ca. 2500 B.C.) and other species in the tomb of Tutankhamen (1390-1380 B.C.). He points out that while man only farmed on a hand-to-mouth level, infestation counted for little, but when he started storing, and later on marketing his products, it gained more serious proportions, but it was only in 1916 that Sir John Fryer, when entomologist to the Board of Agriculture made an appeal to the Royal Society to appoint a committee to investigate the damage done to stored grain by insects. From this beginning, the control bodies dealing with infestation of stored products are traced to the present day.

Chapter 2 is headed "General Entomology" and deals with the general and reproductive structure of insects and their development. This is followed by a chapter on Ecological factors. The next two chapters deal with infesting insects, order by order, with text figures to assist in identification, while Chapter 6 deals similarly with infesting Acarina. Chapter 7 is headed "The Origin, Development and Importance of Infestation, and in following out this heading, attention is given to all angles, from field crops to transport; from overseas stores and warehouses to warehouses and factories on this side, not neglecting the economic angle where market fluctuations make it desirable to keep goods in store longer than was originally intended, and finishing with an account of some cases of severe losses incurred through insect infestation. Chapter 8 deals with prevention and control of infestation, treating the subject generally, and in this the various categories of control are mentioned: hygenic, physical, mechanical, chemical, biological and legislative. Following chapters deal with these various categories in greater detail, and the book is concluded by a general index. The references are listed at the end of each chapter in alphabetical order of authors' names.

The book is well printed on good art paper, to give the best results with the half-tone text illustrations, and of course the line drawings fare equally well; it is strongly bound in linen boards, and should be of great interest to all, from shipping, warehousing and manufacturing interests down to the ordinary householder as well as to students and entomologists.—S. N. A. J.

North European Groups of Aricia allous G.-Hb. Their variability and Relationship to A. agestis Schiff. By **Ove Hoegh-Guldberg.** 184 pp. + 2 col. pl. Naturhistorisk Museum, Aarhus, Denmark (also available as Vol. 13 of Natura Jutlandica).

This study comprises one of a series, and the author styles it "Aricia Studies No. 6." These studies have their origin in his discovery in 1960 of *Aricia allous*, ssp. *vandalica*, and the present volume is an important step towards bringing order to another complex of similar butterflies. The present paper (in the English language with a summary in Danish) is a record of the author's work to illuminate the specific difference of *A allous* on a bio-ecological basis, by morphological analysis of the early

stages, and by surveying their geographical distribution. He also wished to investigate the variability of the two species.

Chapter 1 is an historic-geographic summary of the two species and their various forms with maps of Europe and the Mediterranean region, one according to Beuret, 1960, and the other in accordance with the investigations made by the author 1960-1965. Chapter 2 discusses the problem of rearing, with a modification of the method used by Mr F. V. L. Jarvis, whose three papers on *Aricia* appeared in Proc. S. London Ent. Nat. Hist. Soc. 1958 and 1963, and in Ent. Record **70**, **71**. The author reared the larvae in closed plastic bags to ensure that they did not get mixed with other larvae, and the resultant pupae reared in individual receptacles. Chapter 3 deals with biological-ecological investigations, and gives accounts of the cross-pairings achieved; another subject is contact zones and again the matter of foodplant, biotope, the matter of one or two broods, the relative duration of development periods and the hours of light per day required to prevent the larva from entering into diapause.

Chapter 4 discusses morphological aspects of the various *Ariciae* while 5 is a zoogeographic survey. Chapter 6 discusses the combined results and draws the conclusion that *A. agestic* and *S. allous* are two distinct species, and that the Durham coast *Ariciae* are subspecies *artaxerxes* of *allous*, and not *agestis*.

In Chapter 7 the biological observations made during the survey are brought together, and there follows a bibliography of the literature cited. The two fine coloured plates illustrate insects from twelve experiments, with early stages in some cases. The final part of the book (pp. 123-184) gives tables and experimental journals, so that the student may draw his own conclusions if he so wishes.

The author and his collaborators, mainly amateurs, are to be congratulated on their work, which must be of great interest to the many students of the Lycaenidae, and it is a very fine instance of the friendly co-operation which exists between amateur and professional entomologists.

The book is very well printed on good paper, and is bound in a strong paper cover.—S. N. A. J.

Proceedings and Transactions of the south London entomological and natural History Society, 1966. (Pt. 1, 36 pp. + 2 pl., 9/-; Pt. 2, 32 pp. + 4 pl., 9/6; Pt. 3, 32 pp., 7/6; Pt. 4, 32 pp. 7/6.)

Part 1, dated April, includes an article by B. Goater entitled "An Introduction to the Study of Mosses and Liverworts", copiously illustrated by line drawings. This is followed by a supplementary list of insects from the garden of Buckingham Palace, by J. D. Bradley and R. M. Mere, adding 22 species of lepidoptera to the previous list published by the society. There is also the President's Address by R. W. J. Uffen, the Council's Report for 1965 and Reports of Meetings, including the Annual Exhibition, with two plates illustrating 21 noteworthy aberrations of lepidoptera exhibited.

Part 2 is mostly occupied by an article by F. V. L. Jarvis entitled "The Genus Aricia (Lep., Rhopalocera) in Britain", which extends the study of this genus in this country, and is a very detailed study of the matter, much on the lines of the study by O. Høegh Gulding, recently

reviewed, thus making a detailed account of the genus on both sides of the North Sea. The paper is illustrated by three plates, two of adults, and one of early stages. This is followed by a plate by A. D. A. Russwurm of aberrant butterflies from the New Forest, with a short descriptive note, a note on the Kindrogan Field Centre, and an article by S. R. Bowden on "irregular" diapause in Pieris species with a note on the Caucasian *P. brassicae* L.

Part 3 (September) opens with an article by B. J. MacNulty entitled "Outline of Life Histories of some West African Lepidoptera, Pt. 1, Lymantriidae". This gives descriptions of the larvae of 33 species (about 10% of the number of species to be found in west Africa) with a key to their identification. Brian Morrison contributes an account of *Cymatodera cylindricollis* (Chevrolat) (Col., Cleridae) in a Leith warehouse, and the remainder is occupied with accounts of indoor and outdoor meetings of the Society.

Part 4, December, contains a paper by Horace R. Last on the Coleoptera of the Bailiwick of Guernsey, which is the result of considerable research, an account of which precedes the list of some 1100 species and named varieties, with 5 species so far not recorded in the British list. There follow accounts of field and indoor meetings of the society.

S. N. A. J.

The Locust Handbook, published by the Anti-Locust Research Centre, Ministry of Overseas Development, London. (Sponsored by the F.A.O., U.N.) 57/6.

This handbook is supplied in a loose-leaf cover, and encloses a voucher enabling the purchaser to receive new papers, as these become available, for inclusion. This application of business principles constitutes a great advance in dealing with a subject that is still the subject of considerable research. The pages are filed under nine subject tabs: 1, *General Topics* in which a list of species is given, with an account of each, together with distribution maps showing the maximum area of the inroads of each. 2, *Life Cycle*, which speaks for itself, and is illustrated with good photographic illustrations. 3, *Behaviour*, deals mainly with the Desert locust, again well illustrated with photographs, maps, tables and drawings. 4, *Seasonal Movements*, consists of a series of maps indexed under Annual Frequencies by countries, Monthly Frequencies for each square, subdivided under western, central and eastern regions, and Seasonal Breeding Areas and Major Movements of Desert Locust Swarms. In all, this part contains 77 maps. 5, *Recession Periods*, is again illustrated by a map and photographs, and deals with the locust in the non-swarming periods, and after short notes on all known geographical locations, finishes with recommendations; it is in this stage that much preventive control may be exercised. 6, *Reporting*, gives full details as to how reports should be made so as to have the most effective value. 7, *Control*, deals with all aspects from various insecticides, through various types of apparatus for their application to plans for effecting a spraying operation, either ground or air. 8, *Natural Control*, deals with the extremely interesting subject of the locust's natural enemies from nematodes to birds, not forgetting weather. A slight error on page (38056) 245 has reversed the captions so that the larva is shown as the adult and vice-versa. 9, *Miscellaneous*, consists mostly of tables of weights and measures and conversion tables

including certain measures peculiar to certain states; the last two pages contain a simplified system for describing wind speed and other conditions; finally there is a note on collecting, preserving and packing specimens.

The dividing sheets are indexed for the existing material in their section, and also give room for the indexing of accessions.

Throughout, the language is simple, although detail is not sacrificed to this simplicity; the work is admirably suited to its purpose and should greatly add to the efficiency of the locust control centres at all levels, at a time when human feeding is such a serious problem.

S. N. A. J.

I have received three interesting papers on Microlepidoptera from Ingvar Svensson. The first (*Opuscula Ent.*, **31**: 183-202) (1966) is entitled **"New and confused Species of Microlepidoptera"** and deals with *Oidematophorus vafradactylus* sp. nov., *Conchylis epiliana* Dup. and *C. moguntiana* Rössl. and near relatives, *Acompsia subpunctella* sp. nov., *Coleophora unigenella* sp. nov., *Lithocolletis rolandi* sp. nov., *Elachista dispunctella* Dup., *E. triseriatella* Stt., *Ocnerostoma friesei* sp. nov., and *Ectodemia amani* sp. nov. The paper is in the English language and it is illustrated with photographic and line drawings of genitalia preparations and four excellent coloured plates showing greatly enlarged drawings in water colour by Roland Johansson. The new species (all Swedish) are described and compared with their nearest relatives.

The second paper (*Flora og Fauna*, **68**: 61-69) (1962) deals with the species of the Gelechiid genus *Bryotropha* Hein. and gives a table comparing forewing pattern and male and female genitalia of the twelve species concerned. There follow a page of enlarged drawings of the forewing patterns and then pages of line drawings of the male and female genitalia. There is a short summary in English.

The third (*Opuscula Ent.*, **17**: 45-47) (1952) lists microlepidoptera species in the collection of Erik Norstrand.

Beautiful Moths by **Josef Moucha.** (Translated by Olga Kuthanova and illustrated by Frantisek Prochazka.) 21 pp. + 55 pl. Spring Books, London. 12/6.

This book is a companion to *Beautiful Butterflies*, and is, of course, first and foremost a picture book, but it has 21 pages of preface in which the author gives an interesting account of the moth world, citing a number of outstanding species and families, on one account or another, in language which should appeal to the intelligent non-entomologist, and the use of scientific names together with the vernacular names is not forgotten. The artist's work on the species shown is admirable, and the colour printing has done full justice to it. Of course, the species shown are mostly the "showy" ones, but some of the others with particular interest are also shown, including the bordered white, *Bupalus piniarius* L., which has recently been so abandoned as to make its presence felt locally in sizeable attacks on the plantations of conifers which are now disfiguring our country. The plates are mostly of single species, but two or three of the smaller ones are shown on some plates and the opposite page bears general descriptive comments on the species and its family.

The very reasonable price of this book makes it one which would constitute a very acceptable present for anyone showing an interest in the subject.

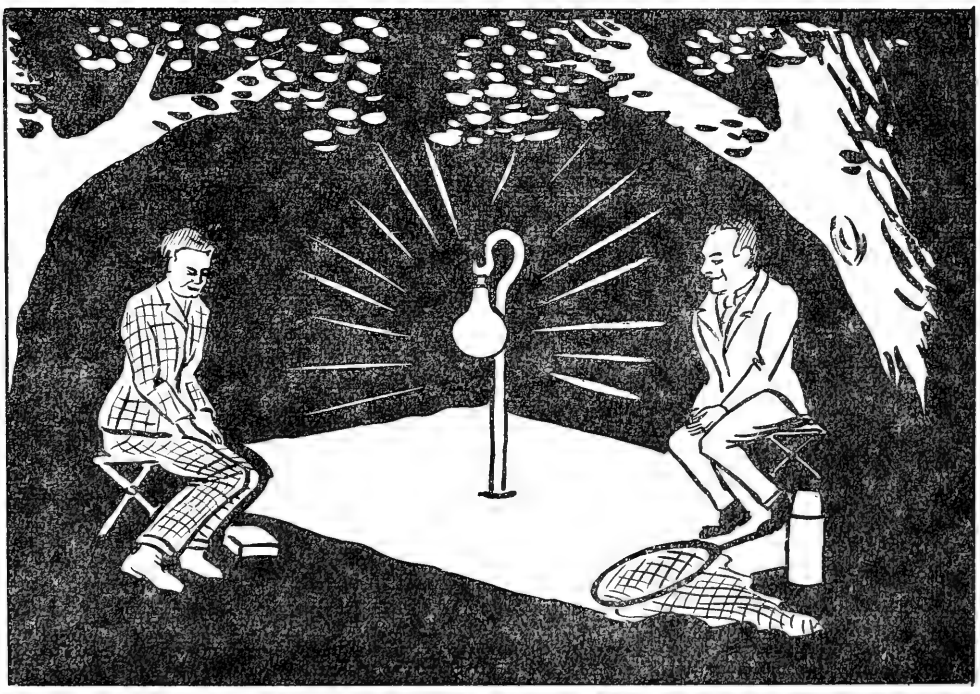
S. N. A. J.

Les Hémiptères de la Réserve Naturelle domaniale du Westhoek, Pentatomoidea. By **R. Mayne.** Published by Le Conseil Supérieur des Réserves Naturelles dominales et de la Conservation de la Nature, 32 bvd. Bisschoffsheim, Brussels 1.

This 48-page paper is in the French language, and constitutes a basic local list of the Pantatomidae of the reserve, but the species listed are described and an account is given of their habits. After the introduction follow four pages headed Generalites in which the superfamily is explained, and the general anatomy of the pentatomid is explained so that terms used in the descriptions may be understood by all. There is then a table of the characteristics of the families concerned, followed by descriptions of the species, many of them with beautiful line drawings. There is a short bibliography and an index to the species.

S. N. A. J.

SEASON 1966



Let's see, Jack, it's your turn to have the moth to-night.

Drawn by R. C. Dyson.

The Record wishes its readers something better than this in 1967. Ed.

EXCHANGES AND WANTS

Wanted.—Part 6, Vol. 4; Parts 2, 3, 7 and 8, Vol. 5; Part 1, Vol. 15: of "The Entomologist's Record".—*State price to Box 172, 'The Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

Wanted.—The Editor would be willing to buy a few clean, unbound, copies of the following at published prices: Vols. 5, 33, 35, 36, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57, 62, 63, and 77.—*Replies to S. N. A. Jacobs, 54 Hayes Lane, Bromley, Kent.*

Wanted.—Second-hand Robinson mercury vapour moth trap, preferably with bulb and ancillary equipment.—*J. M. Chalmers-Hunt, St Teresa, Hardcourts Close, West Wickham, Kent.*

For Sale.—Bound Volumes, Nos. 7, 8, 9, 10, 11, 12 and 13, 'Entomological Record', excellent condition; what offers?—*Box SK669, 'Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

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L. F. HERSALEH to P.O. Rockyridge, Uitenhage, Cape Province, South Africa.
H. E. CHIPPERFIELD to "The Shieling", Palmers Lane, Walberswick, Southwold, Suffolk.
A. D. IRVIN to 10 Manor Crescent, Compton, Newbury, Bucks.
E. RICHARDS to 152 Holgate Road, York.
R. M. PAYNE to 'Westwood', Highwalls Avenue, Dinas Powis, Glam.

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maacki	7/6
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memnon	3/6
paris	5/–
x'enocles	2/6
ganesa	5/–
arcturus	7/6
sarpedon	2/–
gyas	3/6
Delias descombesi	1/6
thysbe	1/6
Hebomoia glaucippe	2/6
Ixias pyrene	1/6
Argynnis hyberbius	2/–
rudra	2/–
Cynthia erota	2/–
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dialis	2/6
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paris	2/6
hoppo	5/–
eurous	2/6
Danais chrysippus	2/–
mellisa	2/–
Hestia leucinoe	3/6
Euploea dufresne	1/9
mulcibar	1/9
koxinga	1/9
Euthalia formosana	2/9
Apatura ulupi	2/6
Sephisa chandra	4/–
Kalima inachis	2/6
Sticohpthlma howqua	3/–
AUSTRALIAN	
Delias aganippe	2/6
harpalyce	3/6
argenthona	3/6
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ENGLAND

THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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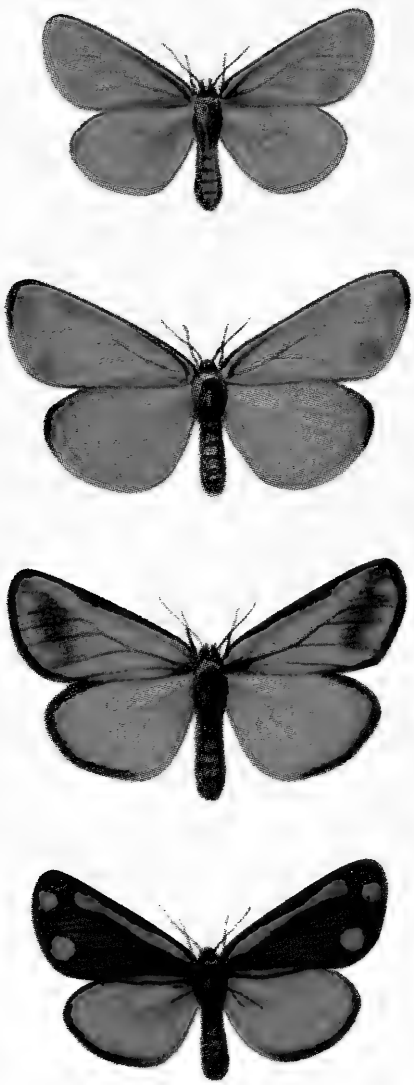

1

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From the original watercolour drawing by A. D. A. Russwurm.

New aberrations of *Callimorpha jacobææ* L.

1. ab. *coneyi* Watson.
2. ab. *intermedia* Watson.
3. ab. *nigrofimbriata* Watson.
4. typical specimen from the same brood.

New Aberrations of *Callimorpha jacobaeae* Linn. (Lep. Arctidae)

By R. W. Watson, F.B.A.A., F.A., F.C.C.S., F.Comm.A., F.R.E.S.

Description

Callimorpha jacobaeae ab. coneyi ab. nov.

Fore and hindwings of a beautiful clear vermilion with the normal red markings clearly visible but of a darker shade.

Fringes buff yellow except for a few black scales on forewing costa.

Thorax and abdomen vermilion but slightly dull in appearance.

Type

Female as photograph by A. W. Coney, June 1965.

Paratype

Male bred 12th June 1966, A. W. Coney.

Female bred 11th June 1966, Dodwell Collection.

Callimorpha jacobaeae ab. intermedia ab. nov.

Fore and hindwings of vermilion with the normal red markings more clearly defined than in ab. *coneyi* and somewhat darker.

Fringes buff yellow suffused with black scaling which is heavier on costa of fore and hindwings.

Thorax and abdomen vermilion suffused with black.

Type

Male bred 14th June 1966, Dodwell Collection.

Female bred 16th June 1966, Watson Collection.

Callimorpha jacobaeae ab. nigrofimbriata ab. nov.

Fore and hindwings of dull vermilion with the normal red markings well defined.

Fringes and margins of all wings black, heaviest on the costa of fore and hindwings. Veins on forewings black and suffusion of black scaling on outer third of forewings.

Thorax and abdomen dull vermilion heavily suffused with black.

Type

Male 18th June 1966, Watson Collection.

History

In January 1966, I received a letter from a master of a school in Dorset attended by one of my nieces who had informed him of my interest in Lepidoptera. I was amazed by the photograph which was enclosed depicting a female *C. jacobaeae* Linn. of a uniform red coloration with the normal red markings still visible and of a darker shade.

The sender, Mr. A. W. Coney, stated that a boy had found the moth in a school playing field and brought it to him. It was photographed and released without the real significance of the insect being appreciated. Fortunately, eggs had been laid in a jam jar from which 70 larvae were successfully reared on groundsel. At this stage Mr. Coney contacted two local entomologists, one of whom was Mr. D. E. Dodwell of Yeovil, and

gave them 43 larvae, retaining 20 for himself which eventually pupated.

I immediately contacted Mr. Coney, stating that, in my opinion, this was an aberration new to science and that every care should be taken to continue the strain in sufficient numbers to learn something of the genetics thereof. Mr. Coney very kindly let me have 10 pupae from which 9 emerged successfully, one drying up.

The results were as follows:—

	(R. W. Watson)
1 coneyi	female
2 intermedia	male—1
	female—1
1 nigrofimbriata	male
5 type	males—4
	female—1 (crippled)
	(A. W. Coney)
1 coneyi	male
1 intermedia	male
6 type	
	(D. E. Dodwell)

The 43 larvae resulted in 17 pupae of which 4 dried up and the remaining 13 emerged as follows:—

3 coneyi
5 intermedia
5 type

Pairings were obtained as follows:—

Brood 1 (R. W. Watson)
intermedia male X coneyi female

The female showed reluctance in laying (fortunately the original was more obliging!) and would not commence until placed on growing groundsel.

From 170 eggs 81 pupae resulted. The larvae were quite healthy and were transferred to ragwort after the first instar.

Brood 2 (R. W. Watson)
type male X type female

Most of the ova were infertile and only 5 pupae resulted.

Brood 3 (R. W. Watson)
wild type male taken M.V. trap at Boldre X intermedia female

This was a very healthy brood and 246 pupated successfully.

Brood 4 (R. W. Watson)
type male X type female

The pairing was taken by Mr. Coney and passed to me to rear, 83 pupae resulted.

Brood 5 (A. W. Coney)
coneyi male X type female

137 pupated.

Brood 6 (A. W. Coney)
intermedia male X wild type female

114 pupated.

Brood 7 (D. E. Dodwell)
intermedia male X intermedia female

From 178 ova of which 156 hatched only 5 pupated. This was, apparently, a weak brood as No. 2.

The strain will be continued and further results published in due course.

ACKNOWLEDGMENTS

The author takes this opportunity of expressing his appreciation to the following for their co-operation:—

A. D. A. RUSSWURM for his masterly execution of the original water colour paintings from which the blocks are prepared.

A. W. CONEY for enabling these experiments to be carried out and for breeding from the pairings 5 and 6 in a very capable manner.

D. E. DODWELL, F.R.E.S., for permitting me to examine and classify his specimens and supplying me with the details of Brood 7.

Porcorum, Sandy Down, Boldre, Lymington, Hants. October 1966.

Butterfly Expedition to Iran, 1966

By Major General SIR GEORGE JOHNSON, K.C.V.O., C.B., C.B.E., D.S.O.

OUTWARD JOURNEY

My wife and I left London on 14th May in a long Land Rover with dormobile body. Crossing the channel by the Dover-Calais ferry, we spent the first night at Ostend. We then had an uneventful run down the German autobahns to Saltzburg, which we reached on 17th May.

The following day we found sheets of pheasant's eye narcissus on the Pötschen pass, and a little further on *Erebia medusa* Schiff. already out by the roadside. Proceeding via Graz, we crossed the Austro-Yugoslav frontier on 19th May and spent that night at a motel south-east of Zagreb. Next morning we woke up to a magnificent dawn chorus of nightingales and golden orioles from a surrounding oak wood. Later that day we stopped for lunch in a rather marshy wood about 50 miles short of Belgrade. Here we took on the roadside a very fresh *Pararge achine* Scop. and a female and male of *Lycaena dispar* Haw. We also had much trouble from some amazingly blood-thirsty mosquitoes.

We continued via Skopje, Thessalonica and Alexandropoulis reaching Istanbul on 24th May. The main items of interest were many handsome black-headed buntings by the roadside in Macedonia, and an excellent fish dinner in Thessalonica.

Next morning we crossed the Bosphorus by ferry, seeing many flocks of sheerwaters flying up and down the narrow strait, and reached Ankara that evening. En route we saw our first black storks. The white ones had been in evidence since entering Yugoslavia.

On 26th May we did a 270 mile run to Samsun on the Black Sea, stopping at an area recently planted with young trees and consequently ungrazed, near Corum. Here some butterflies were flying including *Zerinthia cerisyi* Bdv., *Leptidea duponcheli* Staud., *Cupido sebrus* Hübn. and *Glaucopsyche alexis* Poda.

The Black Sea coast, though beautiful, was uninteresting as regards butterflies and birds. It had one fifty mile stretch of twisty, narrow, and much potholed gravel road between Ordu and Trabzon, the only really bad stretch we met in Turkey. An unusual feature was the quantity of orchards of hazel nuts, one of the major local products.

We left Trabzon on 29th May to cross the Zigana Pass (6100 ft.). On the way up, in the woods on the north side of the pass, we took *Leptidea morsei* Fenton, not apparently recorded from Turkey before. These woods also contained sheets of *Rhododendron ponticum* and *Azalea ponticum* in full flower. On the south side of the pass we found *Z. cerisyi* common on one slope where its foodplant, a species of Aristolochia, was abundant. That night we slept for the first time in the Land Rover near the small town of Bayburt.

Next day on the way to Erzerum we crossed the Kop Dag (7200 ft.), another high pass where there were many primulas and other alpines with crocus just coming out on the edge of snow patches. As we began the ascent from the north we found a rocky hillside comparatively ungrazed, and by the roadside at the foot of this, a number of butterflies were flying. They included *L. duponcheli, Anthocaris damone* Bdv. and *A. gruneri* H.-S.

That night we camped east of Erzerum, and the following day crossed yet another high pass, the Tahir (7500 ft.), where again there were many lovely flowers, and in particular, on its lower slopes magnificent paeonies and large oncocyclus iris with white and purple-brown petals which could be seen from hundreds of yards away. On the rivers in this area, one of which is the upper Euphrates, pairs of breeding ruddy sheldrake were not uncommon. Calandra larks, rock sparrows, black-headed buntings, isabelline wheatears and black-headed wagtails were all features of the landscape. We found the nest of a Calandra lark within a few yards of our pitch for the night.

On 1st June we passed just below Ararat, a magnificent hill, still with much snow on its upper slopes, and crossed the Turko-Iranian frontier at Bazorgan.

IRAN

We found our first Persian butterflies soon after the frontier on stony slopes by the roadside just east of Maku. These included *Pseudochazara telephassa* Hübn., *Coenonympha saadi* Koll., and a fine form of *Melitaea persea* Koll. That evening, after some trouble with an irrigation channel from which we were rescued by the combined efforts of our own four-wheel drive and a pull from a friendly Persian jeep-driver, we slept in the Land Rover by the roadside. The following night on the road to Tabriz we pulled off into a lonely bit of desert. Here for once, there were not even the usual herd boys who generally watched every movement in or about the Land Rover with avid interest during the hours of daylight.

We reached Tabriz on 3rd June after a long and dusty drive over badly corrugated roads and we were very glad of the shower which was the only form of bath provided by the best hotel. Next day we did 200 miles, again mostly over bad roads to Zinjan, where we found a good modern hotel. Here we stayed two nights and spent the morning of 5th June exploring some low and arid hills just south of the town. Here again were *P. telephassa* in considerable numbers with a few *P. persephone* Hübn. including the female form with brown instead of white bars.

On 6th June we continued to Tehran, getting on to the tarmac with some relief, 100 miles short of the city. Here we hoped to meet Dr. L. H. Higgins, coming out by air on 7th June. Unfortunately he was delayed for a week, so after having the Land Rover serviced at the very efficient Rover assembly plant in Tehran, we moved out to the Darband Hotel on the northern outskirts of the city. Here we were nearly 2000 feet higher

up, on the slopes of the Elburz range, and it was pleasantly cooler, particularly at night (elevation 6000 ft.). For the next day or so we explored the roads running east along the foothills, and the only one running back into the range in this area. The hills on the Tehran side are arid, very steep and stony, and heavily grazed by goats. Accessible localities with a good butterfly population were scarce.

The first locality we found was 12 miles east of the hotel, near a hamlet called Lashgarak. Here bare and stony slopes with a little desiccated-looking vegetation sloped down to the Jaji Rud river. These held many *Melanargia larissa* Hübn., some *M. persea* and a few of the commoner Satyrids, but little else.

The Jaji Rud valley running down from the high Elburz showed more promise and was accessible by road as far as Shimshak twenty miles up the river. For most of our stay at the Darband we concentrated on one area about 19 miles from the hotel. This seemed by far the most promising and accessible in the valley. It consisted of easy eastward-facing slopes near the hamlet of Kamarkhani. They were reached by a rather precarious bridge over the fast Jaji Rud, and were irrigated, growing vines, fruit trees, wheat, and patches of vetches, etc., to be cut for hay. Above these rose the steep, stony, and rather bare slopes of the hills. On these slopes and along a dry water-course at their foot, butterflies were really numerous and there were birds including a few chukor, black-headed buntings, and even a dipper on the small torrent which fed the irrigation channels. Dr. Higgins joined us on 15th June and we worked this area daily until we left for the Caspian on 20th June. The more interesting species included the following:—*Pontia chloridice* Hübn. (scarce), *Colias aurorina* H.-S. (2 ♀♀, one the white variety), *Pararge climene* Esp. (abundant), *Satyrus parthica* Led. (the ♂♂ with white venation and large orange patch on underside), *Epinephele davendra* Moore (not numerous, on thyme near the stony wadi bed where it took refuge when disturbed), *Melitaea arduinna* Esp. (on the lower slopes), *Plebejus eurypilus* Frr. (common) and *P. loewii* Zeller (a few).

Our destination on the Caspian was Chalus, about 120 miles from Tehran, for which we set out via Karadj and then across the Elburz over the Gach Sar pass. The road is well surfaced, very picturesque and mountainous, passing through several tunnels, one of which, at the summit of the pass, is about a mile long and one way only. The south side of the watershed is dry and arid except for the Karadj river which provides water for some irrigation. At the top of the pass (8000 ft.) the climate changes, the hills on the northern side being green and well watered from the evaporation and subsequent condensation of the Caspian. The lower slopes are clothed with dense deciduous forest and most of the level ground between the hills and the Caspian is taken up by paddy fields. The descent to the Caspian (100 ft. below sea level) is spectacular to a degree, but the road is well engineered, and provided one does not look over the edge, not particularly alarming! On the way over we stopped at some meadows soon after leaving the Gach Sar tunnel. Here we found *Coenonympha leander* Esp. A little further on at 7500 feet we found an uncut patch of meadow, full of flowers, and here my wife took a fresh *Argynnis alexandra* Mér. on a thistle. A great prize. Near this meadow, on slopes overhanging the road, were a number of bushes of *Colutea arborescens* and, sure enough, flying round them were a number of *Jolas*

jolas Ochs. Though many were worn we secured a fair number in good condition.

That night at Chalus it rained heavily and continued to do so the next day. We drove some way eastwards along the coast but saw little of interest except a flock of rose-coloured starlings feeding by the roadside.

On 22nd June we retraced our steps over the Gach Sar pass but did not get into sunshine again until near the tunnel at the top. Here we stopped for a short time to take some more *C. leander*. We also found a few of the local forms of *Parnassius mnemosyne* L. and *Lycaena hippothoë* L. We went on through Tehran to Abe Ali about 30 miles further east where we stayed at the Ozoneh hotel, a winter ski resort at about 8000 feet. This was to be our base to explore Demavend, the great extinct volcano, which, from a height of 17,000 feet dominates the Elburz range.

To reach Demavend we had to continue on the main Amol road towards the Caspian for a further 11 miles to Purlur, a small village on the River Lar at the foot of the snow-capped mountain. From Purlur, an unmetalled road crosses the Lar and continues round the south slopes of Demavend to a village called Rheyne. This road, rising to about 8000 feet, was the nearest motorable approach to the mountain. A jeep track takes off from this road to the left about a mile above Purlur and leads round the south-west shoulder of the hill and down again to the Lar, which is full of trout. Some 8 miles further on the British Embassy maintains a summer camp as a week-end escape from the heat of Tehran.

Butterflies of interest were unfortunately not very common, perhaps because of the height we were a little early. Odd *Colias aurorina* were seen. *Fabriciana niobe* L. was common on thyme and the Satyrids *P. telephassa, pelopea* and *persephone* were widespread in small numbers. We took a few *Pseudochazara mamurra* H.-S. very fresh and probably just emerging, and one or two of the hairstreaks *Strymon elta* Higgins. In meadows on the western outskirts of Purlur we took a number of *Agrodiaetus pseudoactis* Forster. There were some nice birds, scarlet grosbeaks beside the Lar in long grass and vegetation, rock thrushes, rock buntings, rock nuthatches and horned larks were to be seen on the slopes of Demavend and once we saw a lammergeier.

We left Abe Ali on 28th June for a short visit to the Gach Sar hotel below the pass of that name at 7200 feet. On the afternoon of our arrival my wife and I took a walk up the hill to the highest of the irrigation channels on the right bank of the Karadj river opposite the hotel. A hedge ran along the channel, full of *Colutea arborescens* and we were soon catching *J. jolas*, mostly rather worn. Suddenly on a spray, I saw a strange small pierid which I did not recognize but which turned out to be *Metaporia leucodice* Ev. We soon found it to be quite common along the hedge and it was particularly attracted to certain small willow trees, fluttering weakly up and down them, and often sitting in pairs on the leaves. Many other whites, particularly *Pieris rapae* L. and *P. pseudo-napi* Warr. were flying in the same area together with a number of *Celastrina argiolus* L.

Next day we drove through the tunnel to the area where we caught *A. alexandra* on 20th June. Dr. Higgins was successful in getting another fine male of this species. We caught a number of *Melitaea didyma* Esp. with beautiful dark females, a pair of the large spotted skipper *Muschampia tessellum* Hübn. and several blues of the *Agrodiaetus* genus which were not identifiable on the spot. After lunch at the hotel, we

again tried the hedge for *M. leucodice* and here my wife took a small green hairstreak which proved to be *Callophrys kolak* Higgins, previously only recorded from Turkey.

On 30th June, we returned to our meadow beyond the tunnel, getting several more blues including a bronze-looking insect caught by Dr. Higgins, which turned out to be *A. marcida* Led.; we also tried a neighbouring slope with a good growth of a fine form of wild *nepeta*. Large tortoiseshells were abundant on it and mostly of a form which appeared to be half way between *Nymphalis polychloros* L. and *N. xanthomelas* Herr. Here we secured three more fresh males of *A. alexandra*.

On 1st July we left for Hamadan, which lies 200 miles to the south-west of Tehran on the edge of the Zagros mountains. The town is dominated from the south by a hill over 10,000 feet high called Kuh-i-alwand. At the time of our arrival there were still a few small wreaths of snow on its northern face. The town itself is one of the highest in Iran, lying at 6000 feet.

On 2nd July we motored 28 miles down the Kermanshah road to the Shah pass where the road crosses it at 7500 feet. The country was much grazed, and apart from a few common Satyrids there was not much about. We did, however, get a single *Epinephele wagneri* H.-S., an insect new to us, on slate screes near the top of the pass.

Next day we explored a track leading up into the Kuh-i-alwand between its twin peaks. The track starts on the outskirts of the town but is very rough and only passable to a Land Rover for about 5 miles. A stream, much of which is diverted into irrigation channels, runs beside the track, and on either side were extensive plantations of fruit trees with areas of hay still uncut and ungrazed. This valley was our hunting ground for the next few days, the hay fields providing some interesting blues including *Agrodiaetus hamadanensis* de Lesse, a beautiful large deep blue species, *A. sennanensis* de Lesse, another large, but grey-green species, and *Meleageria elamita* le Cerf, a species much larger and of a different shade of blue from the more familiar *Meleageria daphnis* Schiff. from Europe and Turkey. On return to England Dr. Higgins found that both *A. hamadanensis* and *A. sennanensis* are unrepresented in the national collection at the British Museum. Other butterflies which were abundant included *A. larissa, P. climene, H. lycaon,* and the common Satyrids. In particular, a large form of *Brintesia circe* Fabr., a species we saw nowhere else, abounded in the orchards and hay fields. Dr. Higgins also collected a number of dark insects similar to *H. lycaon* which turned out to be *H. interposita* Erschoff. The Melitaeids were represented by a small colony of *M. persea* on slopes above the cultivation and *Pandoriana pandora* Schiff. was common everywhere. We paid one more visit to the Shah pass securing another *E. wagneri* and a few *A. ripartii* Frr. On this occasion we saw several flocks of rose-coloured starlings and found one pair still feeding barely fledged young.

We left Hamadan on 10th July for Abe Ali via Tehran with a view to a further assault on Demavend for *Colias sagartia* Led. and *Erebia iranica* Gr. Grsh. Unfortunately owing to the indisposition of one of our party this attempt did not succeed. Dr. Higgins left by air for London on 13th July and my wife and I started back by Land Rover on 22nd July.

Our general impression about butterflies in Iran was that one had to work pretty hard for what one got. It is a very large country and an enormous proportion is desert or grain cultivation on the desert edges and

steppe land, and so unsuited to butterfly life. The slopes of the hills are very steep, stony, and, except on the Caspian side, arid and over-grazed. Irrigation produces patches of cultivation and hay field which are butterfly haunts.

Unless very young and active collectors are much confined to the vicinity of roads and these are few and far between.

Even when a suitable area was found the more desirable species were seldom present in numbers and the day's bag was never very large.

Owing to the heat, we found it desirable to be on the ground by 7.30 a.m. and the first few hours were the most profitable, the butterflies flying faster and being more difficult to see as the heat increased. We found it advisable to pack up about mid-day and return to our hotel for much needed refreshment.

HOMEWARD JOURNEY

My wife and I left for home on 22nd July and made no attempt to collect in the very desiccated countryside until well into Turkey. We crossed the frontier on 24th July and slept in the Land Rover immediately below Mount Arrarat. Next day we crossed the Tahir Pass, 6800 feet, and stopped for a short time to collect some blues.

On 26th July we crossed the Kop Dag pass, 7170 feet, but saw little except a few blues. At its foot, however, on the north side we stopped beside a rocky hillside where we had found butterflies on our outward journey. Here we found the summer brood of *L. duponcheli* and two new Satyrids, *Pseudochagera geyeri* H.-S. and *P. bischoffi* H.-S.

On 27th July we crossed the Zigana Pass, but to our disappointment in cloud and rain. There were still many fine flowers, particularly campanulas of various species.

We did no more collecting until we reached a forestry area five miles north of Corum where again we had found butterflies on our way out. Here we found *Arethusana arethusa* Schiff. and a nice blue, *A. menalcus* Frr., not dissimilar to *A. dolus* Hübn.

Instead of traversing Yugoslavia we decided to cross the Epirus and take the car ferry from Igoumenitzou, opposite Corfu, to Brindisi.

We spent the night of 3rd August at Kalambaka below the strange rock monasteries of the Meteora. Here we found a few *M. didyma* Esp. of a very pale form. Next day we crossed the Pindus range by a very indifferent road stopping one or twice to prospect for butterflies. We took *Hipparchia statilinus* Hb. and *Pseudochazara amalthea* Triv. and at the highest point of the road found *Parnassius apollo* L. and *Lysandra coridon* Poda.

On 4th August we crossed to Brindisi reaching Turin on 7th August. Next day we hoped to collect on the Mont Cenis pass but when we got there the sun was fast disappearing behind clouds. We only secured a few *Erebia montanus* de Pr., *E. tyndarus* Esp. and one *Polyommatus eros* Ochs. As we descended to wards Chambery we ran into heavy rain.

Our only further attempt at collecting was on 9th August where in lucerne fields 100 miles south-east of Paris we took a fresh series of *Colias hyale* L.

So ended a most interesting expedition.

A list of species recorded follows:—

E=Elburz Range Iran. T=Turkey. G=Greece. A=Austria.
H=Hamadan Iran. Y=Yugoslavia. F=France.

Papilio machaon L. ..... E.
P. alexanor Esp. ..... E.
Iphiclides podalirius L. ..... All
Zerinthia cerisyi Bdv. ..... T.
Parnassius apollo L. ..... G.
P. mnemosyne L. ..... A.
Leptidea sinapis L. ..... A.
L. morsei Fenton ..... T.
L. duponcheli Stgr. ..... T.
Anthocaris damone Bdv. ..... T.
A. cardamines L. ..... T.
A. gruneri H.-S. ..... T.
Euchloe ausonia Hübn. ..... T.
Pontia daplidice L. ..... All
P. chloridice Hübn. ..... E.
Pieris brassicae L. ..... All
P. krueperi Stgr. ..... E.
P. rapae L. ..... All
P. pseudorapae Warr. ..... E.
P. ergane G.H. ..... E.
P. napi L. ..... E.T.
P. mannii Mayer ..... T.
P. bryoniae Ochs. ..... A.
Aporia crataegi L. ..... E.
Metaporia leucodice ..... Ev.E.
Colias hyale L. ..... F.
C. australis Vty. ..... T.
C. crocea Fourc. ..... All
C. aurorina H.-S. ..... E.
Gonepteryx rhamni L. ..... All
Melitaea didyma Esp. ..... E.G.
M. persea Koll. ..... E.H.
M. trivia W.V. ..... E.
M. arduinna Esp. ..... E.
M. cinxia L. ..... E.
M. phoebe W.V. ..... E.
Mellicta athalia Rott. ..... Y.
Issoria lathonia L. ..... E.H.
Fabriciana niobe L. ..... E.H.
Argynnis alexandra Men. ..... E.
Pandoriana pandora Schiff. .... E.H.
Vanessa cardui L. ..... All
V. atalanta L. ..... E.
Polygonia egea Cramer ..... E.
P. c-album L. ..... F.
Nymphalis polychloros L. ..... E.
N. xanthomelas Schiff. (1) ..... E.
Aglais urticae L. ..... E.
Melanargia larissa Hübn. ..... E.H.
Pararge aegeria L. ..... F.
P. achine Scop. ..... Y.
P. megera L. ..... All
P. maera L. ..... E.
P. climene Esp. ..... E.H.
Hipparchia semele L. ..... T.
H. statilinus Hübn. ..... G.
Chazara briseis L. ..... E.H.T.
C. persephone H.-S. ..... E.H.
C. bischoffi H.-S. ..... T.
Pseudochazara amalthea Friv. .. G.
P. telephassa Hübn. ..... E.H.
P. pelopea Klug. ..... E.H.T.
P. mamurra H.-S. ..... E.
P. geyeri H.-S. ..... T.
Arethusana arethusa Schiff. ..... T.
Brintesia circe Fabr. ..... H.
Satyrus parthica Led. ..... E.
S. cordula Fabr. ..... G.
Pyronia tithonus L. ..... T.G.
Hyponephele lycaon Kuhns. ..... T.
H. lupinus Costa ..... T.E.H.
H. interposita Erschoff. ..... E.H.
H. amardaea Led. ..... E.
H. narica Hübn. (2) ..... H.
H. davendra Moore ..... E.
H. wagneri H.S. ..... H.
Coenonympha iphis Schiff. ..... Y.
C. leander Esp. ..... E.
C. pamphilus L. ..... All
C. saadi Koll ..... E.H.
Erebia medusa Schiff. ..... A.
E. tyndarus Esp. ..... F.
E. montanus Fabr. ..... F.
Strymon ilicis Esp. ..... Y.
S. elta Higgins ..... E.
Callophrys rubi L. ..... T.
C. kolak Higgins ..... E.
Lycaena tityrus Poda ..... E.H.
L. alciphron Rott. ..... E.
L. phloeas L. ..... All
L. dispar Haw. ..... Y.
L. thersamon Esp. ..... E.T.
L. thetis Klug. ..... T.
L. hippothoë L. ..... E.
Chilodes galba Led. ..... E.
Turanana panagea H.-S. ..... E.
Lampides boeticus L. ..... E.
Everes argiades Pall. ..... Y.
Cupido sebrus Hübn. ..... T.
Celastrina argiolus L. ..... E.

Philotes orion Pall. ..... T.
P. vicrama Moore ..... E.
Jolana jolas Ochs. ..... E.
Glaucopsyche alexis Rott. ..... T.
Lycaeidas argyrognomon Bgstr. .. F.
Plebejus argus L. ..... E.H.
P. eurypilus Frr. ..... E.
P. loewii Zell. ..... E.T.
P. pylaon Fischer ..... E.
Cyaniris semiargus Rott. ..... E.T.
Polyommatus icarus Rott. ..... All
P. eroides Triv. ..... T.
P. eros Ochs. ..... F.
Lysandra bellargus Rott. .... E.H.T.
L. coridon Poda. ..... G.
L. olympica Led. ..... T.
L. amandus Scheren ..... E.
Agrodiaetus admetus Esp. ..... E.
A. marcida Led. ..... E.
A. ripartii Frr. ..... E.H.
A. iphigenia H.-S. ..... T.
A. phyllis Christ. ..... T.
A. posthumus Christ. ..... E.
A. sennanensis de Lesse ..... H.
A. hamadanensis de Lesse ..... H.
A. menalcus Frr. ..... T.
A. pseudoactis Forster I
A. cyanea Stgr. ..... E.H.
Meleageria daphnis Schiff. ..... T
M. elamita le Oerf ..... H.
Carcharodus alceae Esp. ..... T
C. orientalis Rev. ..... E.
C. lavaterae Esp. ..... H.
Pyrgus malvae L. ..... E.H.
P. armoricanus Obth. ..... E.H.
P. carthami Hübn. ..... T.
Spialia orbifer Hübn. ..... E.H.
S. phlomidis H.-S. ..... E.
Muschampia poggei Led. .... E.H.T.
M. tessellum Hübn. ..... E.
Thymelicus lineola Ochs. ..... E.H.
T. flava Brunnich ..... H.

NOTES

1. A number of tortoiseshells very near to *N. xanthomelas* were taken in the Elburz. Their exact identity is under investigation.
2. A single female from the Kuh-i-alwand resembles Seitz's figure of *H. narica*, but further specimens and females are required for certain determination.

Castlesteads, Brampton, Cumberland. 10.xi.1966.

The Moth Trap in November in North West Surrey

By R. F. Bretherton, C.B., M.A., F.R.E.S.

November's weather is usually a deterrent to regular working of the moth trap, but many of us go on using it occasionally when the nights look favourable Turning over my records from 1952 to 1962 at Ottershaw and since then at Bramley, I see that my trap was run on average for about eight November nights a year. Recently I have tried it more often - -15 nights in 1966—in the hope of getting some of the late-arriving scarce migrants which have favoured some of my neighbours. But to get any significant attendance one needs a dusk temperature of at least 45°F. and an absence of wind, and such conditions are not frequent even in the best Novembers.

During the fifteen years over 2,000 Macros and Pyrales have been noted, including a rather surprising total of 45 species, besides a few Tortrices and Tinae of which no exact count was kept. The highest score was 106 moths, of twenty species, on 1st November 1954, and the largest number of species seen in a year was 25, in 1961 and 1962.

Half-a-dozen common species have their main emergence and flight periods in November, though the first two usually first appear in October and all can last into December: *Poecilocampa populi* L., *Colotois pennaria* L., *Oporphtera fagata* Scharf., *O. brumata* L., *Erannis defoliaria* Clerck,

E. aurantiaria Hübn. The two last are more woodland species and are not really common in the gardens either at Ottershaw or Bramley.

P. populi males can be counted on to appear soon after dark on any evening after about the 5th of the month when the temperature exceeds 45°F.; the females, splendid creatures often exceeding two inches in expanse, come in smaller numbers later in the night. *C. pennaria* is also a regular visitor and, as with *E. defoliaria*, its great variability in colour and markings tempts me to go on adding to my series year after year. *E. aurantiaria* is also a lovely moth, but neither it nor *O. fagata* and *O. brumata* vary much, in this district at least. Of the last four species of course one usually only sees males, though very occasionally I have found the wingless females in the trap, to which they must have been carried by their partners. Of the other distinctively November species, *Brachionychia sphinx* Hufn. was very rare at Ottershaw, and was only recorded twice; but at Bramley it is quite plentiful and shows great variation in ground colour and in the degree of contrast between the white and dark markings. Its flight habits seem to be the opposite of those of *P. populi*: one gets an occasional female soon after dark, but the males do not appear before about 9 p.m. The November Prominent, *Ptilophora plumigera* Schiff., I have never had in the trap at home, but it appears very locally among maple on the North Downs about 3th November and can be taken as late as the 25th. It is, however, an elusive creature, and to see it in numbers one needs to hit on a warm night when a bulk emergence is taking place, when the males fly freely between 6 and 8 p.m.

Another large contribution to the November score is made by those mainly October species which overlap regularly into the next month. *Agrochola macilenta* Hübn. has been the most numerous of these, though occasionally, as in 1963, it finishes in October. Its congeners, *A. lychnidis* Schiff, and *A. lota* Clerck, are common through the first half of November, and *A. circellaris* Hufn. goes on with them, though it is rather scarce both at Ottershaw and at Bramley. *Allophyes oxyacanthae* L., though very regular, has never given me more than ten November specimens in any year. It is worth watching because of its great variability: this year I was lucky enough to get an extraordinary specimen in which the pale markings extend in streaks from the outer margin to beyond the middle of the forewings. *Conistra ligula* Esp. can be found right through from mid-October until Christmas or even early January, though it is clearly not a hibernator. One sees most of it in the trap in October, with only a few later; but a late-flowering clump of ivy in my garden at Ottershaw sometimes yielded a dozen even in mid-November. Here again the variation is interesting, the rather rare form with almost black ground colour and a white submarginal line being particularly attractive. The so-called November Moths, *Oporinia dilutata* Schiff. and *O. autumnata* Bork., undoubtedly have their main emergence here in the last ten days of October; but there are plenty, particularly of the second species, in good condition until the middle of November. I have not yet detected the third species, *O. christyi* Prout, in my trap at Bramley; but it is abundant at Ranmore and elsewhere on the North Downs well into November. *Chesias legatella* is also a regular, though rather sparing, attendant at the trap early in the month, and in some years, notably 1954 and 1959, the second brood of *Amathes c-nigrum* L. lasted until then.

Other October species which have provided occasional stragglers in November are *Gortyna micacea* Esp. (in four years), *Agrotis segetum*

Schiff. and *Dysstroma truncata* Hufn. (in three years), *Anchoscelis litura* L. and *Gortyna flavago* Schiff. (in two years), and *Episema caeruleocephala* L., *Rhizedra lutosa* Hübn., *Leucania pallens* L., *Citria lutea* Strom., *Cirrhia icteritia* Hufn., *Catocala nupta* L., *Thera obeliscata* Hübn. (once only). After very favourable summers one also gets in November occasional representatives of extra broods. Thus fresh specimens of *Noctua pronuba* L. turned up in 1953 and 1959, of *Agrotis puta* Hübn. and of *Caradrina alsines* Brahm in 1959, and of *Epione repandaria* Hufn. in 1961.

Most of the hibernating moths have disappeared into winter quarters before November. But *Conistra vaccinii* L. and *Eupsilia transversa* Hufn. are exceptions: over the years I have had a hundred of each in the trap in November, and have selected some fine forms from them. *Scoliopteryx libatrix* L. and *Nycteola revayana* Scop. have also each appeared in two years; and I have more than once taken *Dasycampa rubiginea* Schiff. at sugar in November, though never in the trap.

Of the common migratory species *Plusia gamma* L. and *Phlogophera meticulosa* L. have been trapped in November almost every year, though in varying numbers, and *Agrotis ipsilon* Hufn. in ten years of the fifteen. The Pyrales *Hapalia martialis* Guen, and *Nomophila noctuella* Schiff. have come then in six and three years respectively, and *Peridroma porphyrea* Schiff. in three. With the scarcer migrants my own success has not yet been striking: a female *Nycterosea obstipata* Fab. at Ottershaw on 1st November 1954, and a male *Palpita unionalis* Hübn. at Bramley on 10th November 1965. But I still live in hopes of emulating Baron de Worm's capture of *Plusia acuta* Walker at Horsell, on 5th November 1955, or Mr. R. M. Mere's pair of *Hippotion celerio* L. at Chiddingfold on 6th November 1963. As Mr. R. A. French's "Annual Migration Records" show, the first ten days of November is probably the most likely period for this last species, as well as being quite productive of several other of our rarer vagrants—even if one does not run one's moth trap on the South Coast!

Folly Hill, Birtley Green, Bramley, Surrey. 3.xii.66.

How I became an Entomologist

By R. M. Payne

It cannot be denied that bug-hunting is very much a minority pursuit. Although natural history in general has greatly increased in popularity in this country since the Second World War (or perhaps it would be truer to say that *organised* natural history is now much more in evidence than before the War), the expansion seems to have been concentrated in bird-watching, and to a lesser extent in field botany. Entomology remains the Cinderella of amateur natural history, despite the enormous scope it offers. Is this because of the greater intellectual effort, and the homework, needed to become familiar with even a small group of insects? Or is it because it fails on the whole to attract women (and in some circumstances may be actively discouraged by them!), while birds and plants seem to appeal equally to both sexes?

I have always been curious as to the reasons why amateur naturalists take up entomology. Were they influenced by relatives or by an older friend, or did the gift of a collection of set insects start them on the way? Were they attracted by the beauty of Lepidoptera, or did they graduate

through stamp-collecting? Did they tire of keeping tally-lists of birds, or were they lured away from botany by the excitement of the chase? I am sure it would interest the readers of this journal if some of our eminent contributors could take time off from their erudite researches and jot down a few paragraphs on the early stages in their own metamorphosis. The present notes are offered as a sprat to catch a shoal of mackerel.

Clearly inheritance, or a tradition of natural history in the family, can be a favourable factor in leading a youngster to take up bug-hunting. But on the other hand it can be an actual disincentive: I know of one family where the father pursued his entomological way so ruthlessly, and with such disregard of the interests of his wife and children, as to implant in his son a strong and permanent aversion to the whole idea of natural history as a hobby. And we all know entomologists who are the only naturalists in their families, and whose parents or children, or sometimes both, look on their bug-hunting with either amusement or distaste.

In my own case I grew up in a family where my father and two uncles were keen naturalists, though they were not entomologists. But perhaps I had too large a dose of natural history in early childhood. Certainly, although I was induced to make childish collections of sea shells, fern fronds and butterflies, I had no real interest in any branch of natural history until I was 17. Then one of my uncles—I am not sure why, since he knew nothing of Coleoptera—gave me as a Christmas present a copy of the Rev. C. A. Hall's *Common British Beetles*. The coloured plates in this little book, showing an attractive selection of beetles symmetrically arranged, fascinated me, and I am fairly certain (looking back now over many years) that I was converted on the spot. Even to-day, though I have had to dispose of my beetle collection and no longer call myself a coleopterist, I can feel that old excitement again when I open Hall at Plate 8, illustrating the black and yellow burying-beetles, and (dare I confess it?) the vision of pretty specimens in neat rows still haunts me, though I have now moved on to a sterner concept of entomology and, in keeping with the times, profess as strenuously as anyone to abhor the idea of collecting as an end in itself.

Alas! Does one ever recapture the first thrills of collecting? Surely those early days provided excitement of a different kind from the subsequent more informed and sophisticated pleasures which to the lifelong naturalist are always associated with days in the field. One of my first trips, if not the very first, as a dedicated coleopterist—my enthusiasm matched by my total ignorance—was to nearby Ham Common, in Surrey, where with the most intense pleasure imaginable I happened on a specimen of *Typhoeus*, one of the large black dung-beetles, crawling at the mouth of a rabbit-hole. Of course, I soon afterwards came to learn that most beetles were both smaller and less distinctive in appearance than this one, and I had to accept the discipline of steady work with lens and microscope. But I had become a bug-hunter, and though the focus of interest may change and one's enthusiasm wax and wane from time to time, I think most of us would agree that a lapsed entomologist is a great rarity.

VOLUCELLA INANIS L. (DIPT., SYRPHIDAE) IN SOMERSET.—My most interesting specimen this year was a female *Volucella inanis* L. caught by Mr. D. G. Pope in Leigh Woods, Bristol.—A. J. BROWN.

[Audcent, H. L. F., recorded three previous captures in Somerset and none for Gloucestershire. *1950 Proc. Bristol Nat. Soc.*, **28**: 48.—L. P.]

Lepidoptera at Mercury Vapour Light at Ault Hucknall, Derbyshire, during 1966

By J. H. Johnson, F.R.E.S.

The north-east corner of Derbyshire, east of the Rivers Rother and Doe Lea, has been designated "Area 7, Permian", by D. C. Hulme (1957). He indicated that this area has been badly neglected by entomologists in the past, and that a little effort would produce plenty of new records. In an attempt to fill a few gaps in the proposed new county list, I operated a simple box-type light trap, illuminated by an 80w mercury vapour lamp, in the garden of the house of Mr. George Bradley situated a few yards from Ault Hucknall Church, which is reputed to be the last resting place of Thomas Hobbes, the author of "Leviathan", and within sight of Hardwick Hall, the home of the Dowager Duchess of Devonshire until a few years ago, but now National Trust property.

The trap was used most week-ends due to the zeal of Mrs. Bradley and her grandson, Martin, whose interest in the compilation of the list of species never flagged. I am grateful to them for their efforts and I wish that I could find similar gardens and equally energetic colleagues in other neglected parishes of the county so that a more comprehensive survey of the existing lepidoptera could be made. Many common species have still not been recorded from Areas 5 and 8, although it is reasonably certain that they occur there even if not abundantly, and in many cases quantitive records have never been made.

The site of the trap is well within the boundary line of Area 7. The small stream, called the Doe Lea, is about a mile due west and the geological map shows the house actually standing on the Magnesian Limestone. The height above sea level is almost 560 feet, although I do not know if this has any effect on the moth population. The people who live here declare that the air is fresher and healthier than anywhere else within many miles.

The period during which the trap was used extended from 25th June to 22nd October, roughly the four most interesting moths of the year. The "bag" was quite good, 5420 "macros" and 555 "micros" were caught and identified during 68 working nights. The average nightly catch in July was 75, in August 165, in September 60, and in October only 21. The total number of species recorded in this trap during the four months was 185. The previous published total for the whole area recorded by Mr. Hulme was only 119.

The number of smaller species taken was disappointing. The "micros" and even the "pugs" were absent on many nights when they were expected in large numbers. The cause of this scarcity may have been the almost perpetual wind. The house is on the top of a hill, and on most nights a strong breeze could be felt blowing from some direction, usually the west, even when conditions in the valley could truthfully be described as calm. Sometimes when the catch was being examined in the morning, the wind scattered the egg trays all over the garden. I tried moving the trap around so that it was in the shelter of the walls of the house, but this made little apparent difference. The greatest number of moths taken on one night was 782. This was on 13th August. The only moth which could be described as abundant was *Noctua pronuba* L., a third of the season's catch, 1792 specimens, belonging to that vigorous species. Per-

haps its vigour explains its abundance, only the strongest fliers could counteract the winds. One "micro" was unexpectedly numerous, 16 fine large specimens of *Lozotaenia forsterana* F. were taken between 2nd July and 24th July. I was surprised to find that *Apamea monoglypha* Hufn., was represented in the trap by only 282 individuals. This species is usually the most abundant in the north east corner of Derbyshire under any conditions and circumstances, at least from July to September.

Several extensive stretches of woodland containing oak, elm and ash trees in various stages lie within sight of the trap, but the number of woodland haunting species taken was small. *Griposia aprilina* L. appeared on four nights, a very welcome visitor at any time. Luckily one female deposited 32 eggs, which have all turned black, so they are most probably fertile. A female *Catocala fraxini* L. appeared in the trap at about 10 o'clock one Saturday evening, causing a great deal of excitement, mainly on account of its unusual size, since its correct identity was not realised at the time by the finder. No other rarities appeared, but many gaps in the list of species found in Area 7 have now been closed.

The complete list of moths taken in the trap during the season is given below, together with the first and last dates of appearance. The specific names and numbers on the left are those given by Heslop (1964), as this is the nomenclature adopted by Hulme in his proposed new list.

LIST OF LEPIDOPTERA TAKEN IN A MERCURY-VAPOUR LIGHT TRAP SITED AT AULT HUCKNALL, DERBYSHIRE, IN 1966

Heslop's List No.	Species	Dates First	Last	Total
80	*Laothoe populi* L.	July 11	July 14.....	2
109	*Pheosia gnoma* F.	Aug. 6	.....	1
111	*Notodonta dromedarius* L.	July 9	Aug. 3.....	2
125	*Habrosyne pyritoides* Hufn.	July 9	July 26.....	5
126	*Thyatira batis* L.	July 9	.....	1
165	*Cilix glaucata* Scop.	July 2	Aug. 25.....	5
166	*Nola cuculatella* L.	July 9	July 24.....	5
192	*Spilosoma lubricipeda* L.	July 10	.....	1
194	*S. lutea* Hufn.	June 27	July 10.....	6
200	*Arctia caia* L.	July 23	Aug. 13.....	4
273	*Euxoa nigricans* L.	Aug. 7	Aug. 31.....	3
277	*Agrotis segetum* Schiff.	July 2	July 17.....	5
285	*A. exclamationis* L.	June 25	Aug. 6.....	179
286	*A. ipsilon* Hufn.	Aug. 20	Oct. 22.....	130
289	*Lycophota varia* Vill.	July 3	July 26.....	7
292	*Peridroma porphyrea* Schiff.	Sept. 24	Oct. 21.....	9
297	*Graphiphora augur* F.	June 26	July 23.....	39
298	*Diarsia brunnea* Schiff.	Aug. 18	.....	18
299	*D. mendica* F.	June 25	July 10.....	32
302	*D. rubi* View.	Aug. 19	Sept. 25.....	18
304	*Ochropleura plecta* L.	June 25	July 13.....	21
309	*Amathes glareosa* Esp.	Sept. 24	Sept. 26.....	3
311	*A. baja* Schiff.	July 9	Aug. 19.....	84
313	*A. c-nigrum* L.	July 2	Oct. 15.....	93
315	*A. triangulum* Hufn.	July 2	Aug. 3.....	6

Heslop's List No.	Species	Dates First	Last	Total
317	*A. sexstrigata* Haw.	July 23	Aug. 21.....	51
318	*A. xanthographa* Schiff.	Aug. 7	Sept. 12.....	37
319	*Axylia putris* L.	July 9	Aug. 7.....	2
324	*Naenia typica* L.	July 2	Aug. 20.....	10
327	*Euschesis comes* Hübn.	Aug. 3	Sept. 20.....	268
329	*E. janthina* Schiff.	July 24	Aug. 27.....	27
331	*Noctua pronuba* L.	July 2	Oct. 9.....1792	
322	*Lampra fimbriata* Schreber	Aug. 3	Aug. 20.....	3
345	*Mamestris brassicae* L.	June 26	July 31.....	8
346	*Melanchra persicariae* L.	July 10	July 31.....	3
351	*Diataraxia oleracea* L.	July 2	Aug. 19.....	23
353	*Ceramica pisi* L.	July 10	July 25.....	2
359	*Hadena thalassina* Hufn.	June 25	July 3.....	4
376	*Tholera popularis* F.	Aug. 27	Sept. 4.....	2
377	*T. cespitis* Schiff.	Sept. 10	Sept. 20.....	2
378	*Ceropteryx graminis* L.	July 25	Aug. 13.....	5
393	*Leucania pallens* L.	July 2	Aug. 20.....	236
395	*L. impura* L.	July 23	Aug. 24.....	119
400	*L. comma* L.	June 25	July 10.....	14
407	*L. lythargyria* Esp.	July 9	Aug. 20.....	13
408	*L. conigera* Schiff.	July 26	.....	1
413	*Arenostola pygmina* Haw.	Sept. 17	Sept. 24.....	4
430	*Caradrina morpheus* Hufn.	July 2	Aug. 7.....	25
431	*C. alsines* Brahm.	July 30	.....	1
432	*C. blanda* Schiff.	July 10	Aug. 20.....	5
435	*C. clavipalpis* Scop.	July 2	Oct. 1.....	18
441	*Apamea lithoxylaea* Schiff.	July 13	.....	1
444	*A. monoglypha* Hufn.	July 2	Sept. 18.....	282
446	*A. epomidion* Haw.	July 10	.....	1
447	*A. crenata* Hufn.	June 26	July 9.....	2
448	*A. sordens* Hufn.	June 27	July 11.....	11
449	*A. unanimis* Hübn.	Aug. 6	.....	1
454	*A. remissa* Hübn.	June 25	July 26.....	54
456	*A. secalis* L.	July 13	Sept. 5.....	210
458	*A. ypsillon* Schiff.	Aug. 8	.....	1
462	*Procus strigilis* Clerck	July 2	Aug. 7.....	25
465	*P. fasciuncula* Haw.	June 27	Aug. 10.....	19
468	*P. literosa* Haw.	Aug. 13	Aug. 20.....	13
469	*Luperina testacea* Schiff.	Aug. 18	Sept. 11.....	10
472	*Euplexia lucipara* L.	July 2	July 9.....	3
473	*Phlogophora meticulosa* L.	Aug. 24	Oct. 17.....	46
476	*Thalpophila matura* Hufn.	July 23	.....	1
478	*Petilampa minima* Haw.	July 9	Aug. 20.....	15
484	*Hydraecia oculea* L.	Sept. 12	.....	1
488	*Gortyna micacea* Esp.	Aug. 19	Oct. 22.....	84
496	*Cosmia trapezina* L.	July 24	Aug. 24.....	14
500	*Zenobia subtusa* Schiff.	Sept. 5	.....	1
503	*Amphipyra tragopogonis* Clerck	Aug. 9	Sept. 25.....	154
506	*Cryphia perla* Schiff.	July 9	Aug. 13.....	3
514	*Apatele megacephala* Schiff.	July 13	.....	1
518	*A. psi* L.	Aug. 13	.....	1

Heslop's List No.	Species	Dates First	Last	Total
523	*A. rumicis* L.	June 25	June 26.....	2
552	*Bombycia viminalis* F.	Aug. 8	.....	1
557	*Allophyes oxycanthae* L.	Sept. 17	Oct. 15.....	144
559	*Griposia aprilina* L.	Sept. 18	Sept. 23.....	4
564	*Parastichtis suspecta* Hübn.	Sept. 11	.....	1
565	*Dryobotodes eremita* F.	Sept. 19	Sept. 28.....	6
569	*Antitype chi* L.	Aug. 15	Sept. 10.....	11
574	*Omphaloscelis lunosa* Haw.	Sept. 13	Sept. 22.....	3
575	*Agrochola lota* Clerck	Oct. 4	Oct. 9.....	2
576	*A. macilenta* Hübn.	Oct. 15	.....	1
577	*A. circellaris* Hufn.	Oct. 15	Oct. 21.....	21
578	*A. lychnidis* Schiff.	Sept. 17	Oct. 17.....	57
579	*Anchoscelis helvola* L.	Sept. 19	Oct. 1.....	8
580	*A. litura* L.	Sept. 3	Oct. 12.....	107
583	*Tiliacea aurago* Schiff.	Oct. 1	.....	1
584	*Citria lutea* Stroem.	Sept. 20	Oct. 4.....	3
585	*Cirrhia icteritia* Hufn.	Aug. 18	Sept. 27.....	5
586	*C. gilvago* Schiff.	Sept. 21	Oct. 1.....	3
590	*Conistra vaccinii* L.	Oct. 9	Oct. 15.....	3
603	*Catocala fraxini* L.	Sept. 25	.....	1
619	*Episemia caeruleocephala* L.	Oct. 21	.....	1
623	*Plusia chrysitis* L.	June 26	Aug. 9.....	37
630	*P. jota* L.	June 26	Aug. 13.....	24
631	*P. pulchrina* Haw.	June 26	July 9.....	16
635	*P. gamma* L.	June 25	Oct. 21.....	248
639	*Unca tripartita* Hufn.	July 10	.....	1
653	*Hypena proboscidalis* L.	July 2	Aug. 20.....	11
672	*Geometra papilionaria* L.	July 9	.....	1
707	*Sterrha dimidiata* Hufn.	July 30	.....	1
717	*S. aversata* L.	July 2	Aug. 19.....	20
725	*Xanthorhoe ferrugata* Clerck	Aug. 9	Aug. 18.....	5
726	*X. spadiceari* Schiff.	Aug. 9	Sept. 3.....	20
729	*X. montanata* Schiff.	June 25	July 26.....	15
730	*X. fluctuata* L.	July 10	Sept. 24.....	69
736	*Colostygia didymata* L.	July 23	July 26.....	3
747	*Perizoma alchemillata* L.	July 2	Aug. 25.....	34
748	*P. flavofasciata* Thunb.	July 2	Aug. 13.....	4
749	*P. albulata* Schiff.	July 2	.....	1
765	*Ecliptopera silaceata* Schiff.	July 2	Sept. 3.....	25
768	*Lygris testata* L.	Aug. 13	.....	1
770	*L. mellinata* F.	July 10	.....	1
771	*L. pyraliata* Schiff.	July 23	July 24.....	3
772	*Cidaria fulvata* Forst.	July 17	Aug. 13.....	4
776	*Dysstroma truncata* Hufn.	July 17	Oct. 8.....	105
778	*D. citrata* L.	Aug. 13	Sept. 12.....	18
779	*Thera obeliscata* Hübn.	Sept. 10	Sept. 28.....	5
784	*Hydriomena furcata* Thunb.	Aug. 7	Aug. 19.....	3
795	*Epirrhoe alternata* Mull.	July 2	July 9.....	2
816	*Ortholitha mucronata* Scop.	July 2	July 17.....	3
826	*Oporinia dilutata* Schiff.	Sept. 17	Oct. 21.....	93

Heslop's List No.	Species	Dates First	Last	Total
848	*Eupithecia pulchellata* Steph.	July 3	July 17	2
855	*E. centauriata* Schiff.	Aug. 31		1
860	*E. absinthiata* Clerck	Aug. 18		1
864	*E. vulgata* Haw.	June 26	Aug. 13	9
867	*E. icterata* Vill.	July 31	Aug. 19	4
889	*Abraxas grossulariata* L.	July 2		1
896	*Delinia pusaria* L.	July 2	July 17	5
899	*Campaea margaritata* L.	July 9	July 26	5
908	*Erannis defolaria* Clerck	Sept. 17	Oct. 15	3
911	*Ennomos quercinaria* Hufn.	Aug. 13	Sept. 18	6
912	*Deuteronomos alniaria* L.	Sept. 12	Oct. 9	4
913	*D. fuscantaria* Steph.	Sept. 12		1
915	*Selenia bilunaria* Esp.	Aug. 8	Aug. 20	3
920	*Colotois pennaria* L.	Oct. 9	Oct. 21	13
921	*Crocallis elinguaria* L.	July 30	Aug. 25	14
923	*Opisthograptis luteolata* L.	July 2	Aug. 8	17
928	*Ourapteryx sambucaria* L.	July 9		2
935	*Biston betularia* L.	June 25	Aug. 7	6
938	*Cleora rhomboidaria* Schiff.	July 2	Sept. 3	29
941	*Alcis repandata* L.	July 2	Aug. 18	5
961	*Itama wauaria* L.	Aug. 19		1
979	*Eudorea mercurea* Haw.	July 26	Aug. 18	3
983	*Scoparia cembrae* Haw.	July 9	Aug. 18	4
996	*Eurrhypara hortulata* L.	July 2		1
1001	*Nomophila noctuella* Schiff.	Oct. 17		2
1014	*Udea lutealis* Hübn.	July 23	Aug. 31	146
1016	*U. nivealis* F.	July 17	Aug. 14	3
1019	*U. olivalis* Schiff.	July 9	Aug. 20	8
1022	*Haritala ruralis* Scop.	Aug. 13	Aug. 19	2
1042	*Mesographa forficalis* L.	July 2	Aug. 20	14
1045	*Hypsopygia costalis* F.	July 9		1
1061	*Laodamia fusca* Haw.	July 14		1
1128	*Crambus hortuellus* Hübn.	July 4	Aug. 19	80
1143	*Agriphila tristellus* Schiff.	Aug. 2	Aug. 31	25
1175	*Platyptilia gonodactyla* Schiff.	July 9	Aug. 18	3
1179	*Pterophorus pentadactylus* L.	July 9		1
1218	*Agapeta zoegana* L.	Aug. 13		1
1243	*Pandemis corylana* F.	July 2	Aug. 18	46
1252	*Archips oporana* L.	July 9	Aug. 13	8
1266	*Clepsis consimilana* Hübn.	Sept. 23	Oct. 15	2
1267	*C. costana* F.	July 2	Aug. 13	20
1270	*Lozotaenia forsterana* F.	July 2	July 24	16
1292	*Cnephasiella incertana* Treits.	July 23	Aug. 19	36
1303	*Tortrix viridana* L.	July 9	July 17	4
1304	*Croesia forskaleana* L.	Sept. 5	Sept. 12	8
1316	*Acleris variegana* Schiff.	Sept. 11	Sept. 24	13
1416	*Spilonota ocellana* Schiff.	July 9	Aug. 19	17
1422	*Eucosma cana* Haw.	July 17		2
1444	*Pardia cynosbatella* L.	July 2	July 9	9
1447	*Notocelia rosaecolana* Doubl.	June 25	July 17	14

Heslop's List No.	Species	Dates First	Last	Total
1511	*Ancylis badiana* Schiff.	Sept. 18	.....	1
1772	*Hofmannophila pseudospretella* Stainton	June 26	Sept. 19.....	37
1780	*Carcina quercana* F.	Aug. 6	Aug. 31.....	3
1782	*Exaeretia allisella* Staint.	Aug. 9	Aug. 19.....	6
1787	*Depressaria heracliana* Deg.	Sept. 12	.....	1
1820	*Agonopteryx applana* F.	Sept. 4	Sept. 12.....	3
1847	*Anthophila fabriciana* L.	July 24	Aug. 9.....	3
1954	*Yponomeuta padella* L.	Aug. 9	Aug. 18.....	6
2165	*Ypsolopus xylostellus* L.	Sept. 1	.....	1
2178	*Plutella maculipennis* Curt.	July 3	Sept. 22.....	4

REFERENCES

Hulme, D. C. 1957. The Lepidoptera of Derbyshire since 1926. *Ent. Rec.*, **69** : 236.
Heslop, I. R. P. 1964. Revised indexed List of the British Lepidoptera.

Orthoptera Notes from the Pyrenees, 1966

By J. Muggleton

The following is an account of the species of Orthoptera found in the Pyrenees, during a field course, from 27th July until 5th August 1966. All the localities visited, with the exception of two, are in the Hautes-Pyrenees Département of France. The exceptions are a locality to the east of St. Bertrand-de-Comminges in the Haute-Garronne and another near S. Just-Joval, in the Catalonia region of Spain.

Since this was a botanical field course, a thorough investigation of the Orthoptera could not be made, due to a lack of time. However I believe that the following notes will give some idea of the more common species to be found in this region. From what I saw the Pyrenees are as fruitful to the orthopterist as they are to the lepidopterist.

Two of the localities deserve some description as the majority of the species were found at these. The first was 1 km. from Sers, on the road from Barèges to the Col de Tourmalet. Here the road ran in a valley, the north side of which was steep and shrubby and the south side less steep meadowland. There was also a stream in the bottom of the valley. This locality was visited at mid-day when the weather was hot and sunny. The second was at the side of the road to the east of the Col de Tourmalet at a height of 6000 feet on a south-facing slope. This was an area of short grassland, and when we visited it, late in the afternoon, the whole area was covered with cloud. (This is the locality referred to below as the Col de Tourmalet locality.) It may be interesting to note here that the Cirque de Gavarnie which is such a well-known locality for Lepidoptera, was totally devoid of Orthoptera. No doubt the explanation for this, is that the high walls of the Cirque keep the spring sun off the ground of the Cirque thus preventing the snow from melting. This would produce unfavourable conditions for the young stages of the Orthoptera.

The nomenclature in the following notes is that used by Chopard (1955), and the English names are those used by Ragge (1965).

Tylopsis liliifolia Fab.

This green or brown bush-cricket is not found in Britain. This and the

following species have long, fine antennae; they also have hindwings that are much longer than the forewings. An immature female of this species was found amongst some dry grass at S. Just-Joval on the 5th August. This was the only specimen of this species found in the Pyrenees.

Phaneroptera quadripunctata Br.

This bush-cricket is green, speckled with brown and is not found in Britain. Two immature specimens were found at the roadside to the east of St. Bertrand on 4th August. A mature male was found in a dry, shrubby locality at S. Just-Joval on 5th August.

Tettigonia viridissima Linn. (Great Green Bush-cricket)

Two specimens of this bush-cricket were found at the Sers locality on 28th July. Both took to the wing when disturbed. One, a female, was caught after it had flown a short distance and had alighted on a bush.

Pholidoptera cinerea Linn. (Dark Bush-cricket)

Only two specimens of this species were found. One, at the Col de Tourmalet on 27th July, was an immature female. The other, which I found at the Col de Soulor on 1st August, was a mature male. In view of the fact that this species is normally found in the vicinity of hedges and bushes (Ragge 1965) these two captures are surprising, as these two localities were both open mountainsides.

Decticus verrucivorus Linn. (Warbiter)

This rare British species was found in considerable numbers in three localities. I first found it in the meadowland at Sers on 28th July. From this locality we travelled to the Col de Tourmalet, stopping on the way at the roadside, 4 kms. east of Barèges. Here, at a height of 5400 feet, on a west-facing slope, this bush-cricket was quite common in the short grass. Our final stop, this day, was at the Col de Tourmalet locality. *D. verrucivorus* occurred here in both its green, and brown, coloured forms. At the previous two localities and at the next one, it only occurred in the more usual green form. A single specimen was found at the Col de Soulor on 1st August. All the above localities were mountainsides covered with short grass and, with the exception of Sers, were exposed.

Stenobothrus lineatus Panzer (Stripe-winged Grasshopper)

A single female was taken at the Col de Tourmalet on 28th July.

Stenobothrus nigromaculatus H.S.

This small grasshopper is not found in Britain; it resembles *S. stigmaticus* Ramb. (Lesser Mottled Grasshopper), but is larger. It was found in the woods above the Pont d'Espagne, and around the Lac de Gaube on 27th July. It was also found in clearings in the woods above the Lac d'Estaing on 30th July.

Omocestus viridulus Linn. (Common Green Grasshopper)

This species was common amongst the short grass at the Col de Soulor on 1st August.

Chorthippus brunneus Thunb. (Common Field Grasshopper)

A single immature specimen of this was found at the Sers locality on 28th July.

Chorthippus longicornis Latr. (=*parallelus* Zett.) Meadow Grasshopper)

Two specimens of this grasshopper were taken at the Col de Tourmalet on 28th July.

Arcyptera fusca Pal.

This magnificent grasshopper is not found in Britain. It is closely related to our own rare *Mecostethus grossus* Linn. (Large Marsh Grasshopper) and its colouration is similar to this species. It is a large species, the total length of one of the males I caught being 32 mm., and of a female, 39 mm. The wings of the female do not reach the end of the abdomen. A single female was found at the Lac de Gaube on 27th July. Two males were found at the Col de Tourmalet on 28th July.

Oedipoda coerulescens Linn.

This medium sized grasshopper does not occur in Britain. It is of a uniform light brown colour with blue hindwings. There is also a single black band on the hindwing. Three immature examples were found at the Sers locality on 28th July. Two mature examples were seen at S. Just-Joval on 5th August. These took readily to the wing, showing their blue hindwings.

As with *P. quadripunctata,* the specimens on the Spanish side of the Pyrenees were mature whereas those on the French side were immature. This is probably a reflection of the difference in climate between the two sides of the Pyrenees.

Pezotettix giornai Rs.

This is another species that is not found in Britain. It is a small light-brown grasshopper, with two distinctive dark-brown marks on the posterior femora. Chopard (1955) mentions that this species is easily mistaken for a larva, because of its very reduced wings. This impression is, as I myself found out, very true. It was found at the Sers locality on 28th July.

I hope that this article has given an idea as to the number of species of Orthoptera that can be found in the Pyrenees. Finally, I should like to express my thanks to Drs. B. Frankland and B. M. G. Jones who led the field course, and also to the many members of the course who brought me specimens that I might not have otherwise seen.

REFERENCES

Chopard, L. 1955. Atlas des Aptérygotes et Orthoptéroides de France. Paris : Editions N. Boubee & Cie.

Ragge, D. R. 1965. Grasshoppers, Crickets and Cockroaches of the British Isles. London : Warne.

Queen Mary College, Mile End Road, London, E.1. 14.xii.1966.

An Inquiry into the British Status of the Genus *Trichodes* Hbst. (Col., Cleridae)

By A. A. Allen, B.Sc., A.R.C.S.

Two species of this interesting Malacoderm genus, *T. apiarius* L. and *T. alvearius* F., figure in most of the older works on the British beetles as great rarities in this country. Both are very conspicuous and handsome insects, sure to attract the attention of even the non-coleopterist whenever met with. At 10-16 mm. in length they are the largest Clerids recorded in Britain, instantly known by the alternate dark blue (or violaceous) and red or orange bands across the elytra—the rest of the body being metallic blue or greenish-blue and very hairy—and the broad, compact and abruptly truncate antennal clubs. They differ in the disposition of the coloured bands and are readily distinguishable from each other by the fact that the apex of the elytra is purplish-blue in *apiarius*, but orange or red in *alvearius;* the latter species, moreover, which tends to be the larger*, has the head and thorax very strongly and densely punctured, and the surface less shiny with longer hairs—especially at the sides of the thorax and on the legs. They are usually found on flowers in June, and chiefly those of Umbelliferae.

Canon Fowler, the standard authority on our Coleoptera, lists the captures known to him (1890: 172)—3 or 4 under each species, to be considered later. Besides these, which all appear to have taken place before the middle of last century (and mostly a good deal earlier), there certainly exist, in our older or larger collections, further specimens with minimal or no data; but the total number of reputed British examples of both species together, recorded and unrecorded, can hardly at the most generous estimate exceed 18 or 20 and is probably nearer 12 or 15. One is struck by the apparently total cessation of captures from the above period onwards, i.e. over the last 100 years and more—although, as will be seen, there is a single hitherto unpublished recent find.

Fowler includes the two species with considerable reserve, and as probably introductions; pointing out that as the larvae prey on those of bees, the insects might easily be imported in some stage in foreign hives. Since the coral-red larvae have been known from antiquity as injurious to bees on the Continent (though it is also suggested that they may be scavengers rather than predators, attacking mainly diseased or sickly grubs), the above explanation of the beetles' occurrence in Britain appears reasonable enough; and it has been generally adopted by entomologists. The two species have thus since Fowler's time been dropped from our list, as being evident aliens. It is the object of this paper to see whether or not that assumption will stand up to more critical scrutiny than it seems to have yet received, and what evidence, if any, can be adduced in its favour.

If we look a little into the history of British apiculture, as recorded in the literature of the subject, two negative but highly pertinent facts emerge. Firstly, the standard authors who deal with the pests and predators of our bees, with one exception, make no mention of *Trichodes.* Only the Rev. William Durbar (1840) remarks that '*Clerus Apiarus*'—of which

*This applies to the few British specimens I have seen, but authors give the same length for both species.

he gives a coloured figure—was known to Aristotle as feeding in the larval state on bee larvae in hives, but goes on to say "we have never heard of an instance of such being met with, or injurious to bees, in this country". (He was writing, be it noted, at a period when occasional British captures of the beetles were probably still being made.)

Secondly—and even more significant—a perusal of the literature shows that *importation of hives, combs, or bees in any stage is not known to have occurred before 1859; by which time captures of Trichodes had already virtually ceased.* If such importations took place at all, therefore, they must have been on a practically negligible scale, or they would surely be mentioned by such an authority as Dr. Malcolm Fraser in his *History of Beekeeping in Britain* (1958). There was, indeed, no need for them; beekeeping had been an established practice in this country from exceedingly early timees, our stocks had been built up over the centuries, and no beekeeper would have gone to the trouble and expense of getting hives from abroad when they were so easily made at home from the most ordinary and abundant materials. It was not until 1859 that queens of the Ligurian bee (the subspecies *ligustica* Spin. of *Apis mellifera* L.) were imported from Italy by Thomas Woodbridge of Exeter; and the Carniolian subspecies was introduced as late as 1870.

The very scanty published records of *Trichodes* in Britain include no mention, as far as I know, of a capture in, on, or about a beehive, or in the vicinity of a bee-farm, as must have occasionally happened had the beetles or their early stages been introduced as above. One cannot imagine such showy insects or their almost equally striking larvae being wholly overlooked by our beekeepers, who were mostly well-educated professional men probably conversant with some of the foreign literature of the subject and thus not entirely ignorant of the 'beehive beetles' even if they had never seen one.

From this it appears that not so much as a scrap of evidence exists for any connection between these Clerids and domesticated bees in Britain, and *the common assumption that foreign hives were the source of the beetles collapses as soon as examined.* Against the argument that they might have been derived from importations too few to have been noted in the books, it can at once be objected that, in that case, there would be no reason for captures of *Trichodes* to have practically ceased by the mid-century; on the contrary, they should have become more frequent from that time on, when there is no doubt that bees *were* occasionally (*ex hypothesi*, more often) imported from countries where the beetles are common. Similar considerations apply to any idea of spontaneous immigration as the source of our specimens, besides the lack of evidence for such a habit in the genus.

Another point could be brought against the theory of introduction. Fowler (p. 171) remarks that no less than 17 species of the genus occur in Europe, mainly the warmer parts; most of which appear to have a similar mode of life (though some are associated with other Hymenoptera). Yet no species, other than *apiarius* and *alvearius*, is on record as having been found in Britain, as would be expected to happen occasionally if they were liable to casual importation.

There remains, then, the alternative—never yet, I believe, seriously considered—that the two species in question were true natives which became extinct about the mid-century. Let us see whether, after all, there are any fatal or even material objections to it.

Fowler raises what at first looks like one, when he writes (p. 168) that the genus *Trichodes* "has certainly occurred in Britain on several occasions, and seems to have almost, if not quite, as good a claim to admission as indigenous as *Tarsostenus;* as, however, Mr. Gorham is of opinion that the two species which have been found in Britain . . . are strictly Alpine insects, I have only included them doubtfully". On this point, however, Gorham must have made some mistake, for none of the Continental authors appear to indicate such a restriction; on the contrary, both species are given as occurring throughout the greater part of, e.g., France and Germany, and, though common in Alpine regions, as not specially mountain insects. The objection, therefore, cannot be sustained.

Nor is there any feature of their actual distribution abroad which precludes their having once belonged to our fauna. Scores of species well known as British, some fairly common and others rare, have a similar European range centred more or less in the south but spreading over mid-Europe, and attaining their north-westerly limits in our islands. This distributional group includes species that seem to have died out here about the same time as the two *Trichodes*—as, for instance, our two finest *Rhynchites, R. avratus* Scop. and *R. bacchus* L. (These two species, incidentally, are retained on our list—as, in my view, *T. apiarius* and *T. alvearius* should have been.) Thus, there is clearly no *a priori* reason why these Clerids should not have been indigenous to Britain.

Being on the extreme edge of their natural range, their survival in England (the most northerly record for both is from the Manchester area) would be precarious and liable to be terminated by any adverse factor such as a gradual climatic deterioration. The few sporadic captures would represent some of the last lingering remnants from a more favourable past. They had probably been rare for a very long time; and having become attached to species of wild bees, their rarity and loss of adaptive power would hinder any spread to, and infestation of, hives; which would account for the want of reports of them by apiarists.

From the records themselves, unfortunately, next to nothing can be learnt. Circumstantial details have been published in one case only, as far as I am aware; they are worth quoting in full.

Under *Clerus apiarus* L., Stephens (1830: 326) writes: "I was present at Coombe-wood, near Dover, in June, when Mr. Stone beat a specimen of this elegant insect out of a hawthorn bush, but which escaped; but a second example was subsequently taken near the same spot and forwarded to him, and which is now in the collection of Mr. Bentley. The insect has also been taken in Norfolk, and near Manchester". Whilst, of course, nothing certain is deducible, this hardly sounds like a casual importation, and the fact that *two* specimens occurred in the same locality is suggestive. Fowler gives the above records and adds 'New Forest'; I do not know the source of this, but the area is one more famous for native rarities than for introductions. My specimen of *apiarius,* purchased from E. W. Janson's collection, is labelled 'Mr. Chant'; and there is a very old and decrepit one in the Power collection, labelled merely 'B. M. Coll.'.

In the Manchester Museum is one from the J. Sidebotham collection labelled 'Ichniton [?]/1868' and what looks like 'Carsalton' (Carshalton in Surrey?), but neither name is fully legible. The first may be that of a collector, and the year that in which Sidebotham acquired the specimen.

Another, *ex coll.* J. Ray Hardy, is labelled 'Manchester market'; but it cannot well be the one mentioned by Stephens as taken *near* (not *in*) that city, which should have belonged to an earlier period when it was most unusual to attach any data at all to an insect. A market suggests importation, which indeed may have been the case with this specimen. If, however, the species had occurred in the area a long time previously, it is not even a very high probability, and a breeding-site somewhere in the surrounding country is more likely to have been the source of both.

For *T. alvearius*, Stephens may again be quoted (*ibid.*): "This insect is also said to have been taken near Manchester, but a most magnificent specimen is in the collection of Mr. Chant, which was 'taken near Dorking, in June'—Mr. Waterhouse". Fowler adds: "There is a specimen in Dr. Power's collection, without locality, taken by Mr. Buxton" (it is still extant). Another from the same collector is in the Manchester Museum, as is also one marked 'Hartwright' (clearly a person's name)—both *ex coll.* Sidebotham. Of this species I possess a very fine example, at the upper limit of size, also from the Janson collection and labelled 'Mus. Desvignes'.

It is, of course, quite possible that one or two of these reputedly British specimens of either species are of foreign origin, but that cannot well be the case with all.

I now give the one and only modern record known to me of a *Trichodes* in Britain, not previously published (except, no doubt, in the annals of the undermentioned Society). A specimen of *T. apiarius* was taken in June 1950 on an umbelliferous flower beside the River Lea near Tottenham, N. London, by Mr. M. Shaffer, and shown at a fairly recent Exhibition of the South London Entomological and Natural History Society. From the nature of the locality, and the fact that there are timber wharves nearby, the insect can scarcely be regarded as anything other than a chance introduction; but the find is of interest as showing that *Trichodes* may still be met with occasionally in this country, and is, perhaps, a further point in favour of their reinstatement in our list. A casual individual might come to be thus imported through the fact of bees having nested in an unusual situation. This, of course, has no bearing on the status of our ancient specimens; for over 100 years in the records would be inexplicable on the basis that all our examples were importations.

To sum up: all available evidence seems to point in one direction, viz., away from the accepted notion that *Trichodes apiarius* and *alvearius* were aliens in Britain, owing their occasional presence here to foreign beehives, and towards the conclusion that they were ancient survivals of the indigenous fauna which 'died out during the historic period of British coleopterology.

I am indebted to Mr. M. Shaffer, of the British Museum (Nat. Hist.), for permission to publish his notable capture; and most particularly to Mr. W. E. J. Hooper, the County Beekeeping Instructor of the Essex Institute of Agriculture, for his kindly interest and very willing provision of much valuable information in his special field; also to Mr. F. W. H. Auld and my friend Mr. G. Shephard for their good offices in that connection, and to Mr Colin Johnson, of the Manchester Museum, for details of the material in the British collection there.

REFERENCES

Durbar, W. 1840. *Bees* (*The Naturalist's Library*, **6**). Edinburgh.
Fowler, W. W. 1890. *The Coleoptera of the British Islands*, **4**. London.
Fraser, M. 1958. *A History of Beekeeping in Britain*. London.
Stephens, J. F. 1830. *Illustrations of British Entomology: Mandibulata*, **3**. London.

63 Blackheath Park, S.E.3. 21.xi.66.

Notes and Observations

LEUCANIA UNIPUNCTA HAW.: A TEMPERATURE EFFECT.—I have recently reared a brood of this migrant moth from the egg stage. It was found that the larvae grew very uniformly, pupation taking place over quite a short period. As a safety precaution, the pupae were divided into two batches, one of which was held within the temperature range 60°-80°F., whilst the other batch was treated to the cooler range of 40°-65°F.

In both batches, losses were very small and emergence occurred over quite short periods. Apart from a few stragglers, the higher temperature range batch emerged during the period 24th-29th November and the lower temperature range batch emerged during the period 17th-22nd December.

The two batches show a distinct colour difference, the moths of the higher temperature range being darker in general appearance over all wings. This is largely due to a deepening of the ground colour, but there is also, especially in the males, a heavier sprinkling of black scales.—T. D. FEARNEHOUGH, 26 Green Lane, Shanklin, I.O.W.

STIGMELLA PULVEROSELLA STT. AND S. GLUTINOSAE STT. (LEP. NEPTICULIDAE) IN SCOTLAND.—In October I received from Martin Speight some Nepticulid mines which he had collected the previous month in Scotland. There were two species, *Stigmella pulverosella* Stt, on *Malus* from Strathardle, Perthshire, and *S. glutinosae* Stt. on *Alnus* from Ballachulish, Argyllshire. They are, I believe, unrecorded from Scotland.—S. C. S. BROWN, 158 Harewood Avenue, Bournemouth. 28.xii.1966.

BUTTERFLIES IN NORWAY.—We have had a very bad season in Norway, in fact the past three years have been very bad as regards bugs. This summer, there has been nothing worth taking; I saw a large number of scarce coppers and purple edged coppers down in the south during my summer holidays but I did not take any as I have full series of both in my collection. Many species that were common in Oslo district have disappeared during the last four or five years. The Queen of Spain fritillary was very common; I took a fine series of eight in the palace gardens in the centre of Oslo one afternoon (have you got any flying in the gardens of Buckingham Palace, London?). The comma was also very common, but I have not seen one for five years now. *Antiopa* could also be seen in the suburbs, but that too has vanished. I found two in my cellar last winter; they were perfect specimens and I think they must have been brought in with a load of wood I had in from Sweden. During my twenty years of collecting in Norway I have only taken seven small whites *P. rapae;* it is very scarce here, but *P. napi* is very common including many variations.—HENRY LEE, Sons Gate 7ii Opg. I, Oslo 6, Norway. 28.xii.1966.

ASILIDAE.—Mr. Skidmore, when writing, "Asilid larvae, then, like many dipterous larvae, may be looked on as saprophagous or, at most facultative carnivores" (1966, *Ent. Record,* **78**: 232), appears to have overlooked Professor Poulton's paper in the *Transactions of the Entomological Society of London* for 1924 (pages 121-133) wherein he records Dr. V. G. L. van Someren's observations on the Asilid genus *Hyperechia,* whose larvae feed on the larvae of the Xylocopid bees that form the models of the imagines.—D. G. SEVASTOPULO, Mombasa. 8.xii.1966.

HETEROCERA OF VITI LEVU, FIJI ISLANDS.—I can add a little to Mr. Robinson's notes (*Ent. Rec.,* **78**: 253-255) with records from places other than Fiji.

Chromis erotus Cr. feeds in Australia on *Cissus* and *Vitis* (Ampelidaceae).

Deilephila placida Wlk. Foodplant in India, *Tabernaemontana* (Apocynaceae).

Hippotion celerio L. A large number of the recorded foodplants in India and East Africa. These include *Cissus, Vitis* (Ampelidaceae); *Arum Caladium, Cryptocoryne* (Aroideae); *Impatiens* (Balsamineae); *Beta* (Chenapodiaceae); *Convolvulus* (Convolvulaceae); *Sorghum, Zea mays* (Gramineae); *Gossypium* (Malvaceae); *Boerhavia* (Nyctaginaceae); *Rumex* (Polygonaceae); *Spermacoce* (Rubiaceae).

Hippotion velox L. Foodplant in India, *Pisonia alba* (Nyctaginaceae).

Herse convolvuli L. Recorded foodplants include *Convolvulus, Stictocordia* (Convolvulaceae); *Phaseolus, Dolichos, Arachis* (Papilionaceae); *Helianthus* (Compositae). There is even a record of bamboo.

Theretra pinastrina Mart. Indian foodplants are *Caladium, Colocasia* and other Aroideae; *Boerhavia* (Nyctaginaceae); *Jussiaea* (Onagraceae).

Euchromia Hübn. The recorded foodplants both in India and East Africa all belong to the Convolvulaceae.

Argina cribraria Clerck Foodplants both in East Africa and India are *Crotalaria* spp. (Papilionaceae).

Nyctemera baulus Bsd. Foodplants of *Nyctemera* both in India and East Africa are *Senecio* spp. (Compositae).

Utetheisa pulchella L. Recorded foodplants in India and East Africa are *Heliotropium, Myosotis, Vaupelia* (Boraginaceae).

Asota woodfordi Druce All *Asota* spp. that I have bred have fed on *Ficus* spp. (Moraceae).

I hope the above will help Mr. Robinson to add to his breeding experiences.—D. G. SEVASTOPULO, F.R.E.S., Mombasa. 20.xii.1966

A LATE VANESSA ATALANTA L.—I was much surprised to see a specimen of *Vanessa atalanta* L. flying near my home at about 2.15 p.m. on 29th December, 1966. I watched it fly about two hundred yards in a north-easterly direction before it disappeared over the rooftops. It had been a very mild wet morning, but the sun was shining when the butterfly was seen. A very severe frost had occurred on Christmas morning and dull wet weather had followed locally until this brief period of sunshine.

The butterfly was flying very strongly and I was left wondering whether it could have been an odd migrant, or whether it had been disturbed from hibernation.—D. G. DOWN, 30 St. George's Drive, Prittlewell, Essex.

A FURTHER RECORD OF LEPTOMORPHUS WALKERI CURT. (DIPT.: MYCETOPHILIDAE) IN SURREY.—Several notes have appeared recently (*Ent. Rec.* **77**: 287, **78**: 80-1) on the distribution of this elusive but possibly widespread species. Only three records were given for Surrey, all of them on the North Downs at the eastern end of the county (Chelsham, Old Coulsdon and Devil's Den Wood, Coulsdon). I can add a further Surrey record from near the centre of the county, at White Down near Gomshall. A male was taken in June 1964 near the top of the escarpment of the North Downs adjacent to the margin of a fairly new clearing in a beech wood. It was swept from Rosebay Willowherb and other vegetation which had colonized the clearing, the situation lying within a degraded chalk pit.—A. E. STUBBS, 91 Clitherow Avenue, Hanwell, W.7.

POGONOTA HIRCUS ZETT. (DIPT., SCATOPHAGIDAE) IN SURREY.—The recent note by Sir Christopher Andrewes and Mr L. Parmenter on their discovery of this nothern species at a boggy area in the New Forest (*Ent. Rec.*, **78**: 216) was of particular interest to me since I have taken it in Surrey. In the course of an entomological survey for Surrey Naturalists' Trust I swept a single female from boggy ground adjoining open water on 10th July 1965 at Wisley Common. With the exception of a single record from Warwickshire the species was associated with moorland pools in Scotland and its occurrence in the South was not suspected. The New Forest and the heathlands of Surrey, however, are two of the few areas in Southern England containing ground resembling boggy moorland and the occurrence of *Pogonota hircus* provides a good example of the faunal elements shared by these three geographically isolated districts.—A. E. STUBBS, 91 Clitherow Avenue, Hanwell, W.7.

MIGRANT LEPIDOPTERA VISITING LIGHT AT DOVER, 1966.—In a poor season generally with particularly small numbers, both of species and of individuals, the following are the more notable captures in my mercury vapour trap in the garden of my house during 1966:—

11th June	1	*Lithosia quadra* L. ♂
21st June	1	*Cosymbia puppillaria* Hübn. ♂
24th June	1	*Margaronia unionalis* Hübn. ♂
25th June	1	*Cosymbia puppillaria* Hübn. ♂
8th September	1	*Leucania unipuncta* Haw. ♂
11th September	1	*Laphygma exigua* Hübn. ♂
20th September	1	*Leucania unipuncta* Haw. ♂
22nd September	1	*Rhodometra sacraria* L. ♀
6th October	1	*Margaronia unionalis* Hübn. ♂
13th October	1	*Heliothis armigera* Hübn. ♂

Nomophila noctuella Schiff. was about as numerous as usual and *Hapalia martialis* Guen. (*ferrugalis* Hübn.) was plentiful from 2nd June until well into November. On some nights 25 were recorded.—GEORGE H. YOUDEN, 18 Castle Avenue, Dover. 19.xii.1966.

A FEW BUTTERFLY NOTES FROM THE SOUTH-EAST.—*Kent.*—At Sandwich Bay, on 8th June, a very large dark butterfly came straight for the car in which my friend and I were making our way slowly over a field track, and swerved aside at the last moment. We felt sure it was too large and dark for *Nymphalis io* L.; while a stray *Apatura iris* L. at that time and

place would be almost unthinkable. Having since seen that *Euvanessa antiopa* L. has been recorded once or twice this year, I consider there is little against its having been that species; especially, perhaps, as a *Vanessa cardui* L.—an obvious immigrant—appeared shortly afterwards. On the same day *Coenonympha pamphilus* L. and *Polyommatus icarus* L. were plentiful on the sandy foreshore.

The second brood of *P. icarus* was out in force, together with *Heodes phlaeas* L. in about equal numbers, at the flowers of heather near Farningham on 17th August.

At Higham Marshes on 3rd July I boxed a fresh *Strymonidia w-album* Knoch from a thistle head; there was a row of elms quite near. The locality is not very far west of High Halstow where Mr. A. W. Gould and I found the species in 1955 (*Ent. Rec.*, **67**: 154).

From my garden (Blackheath) there is little of special interest to report, the 'great event' of the season—the revival of *Celastrina argiolus* L.—being the subject of a separate note. However, two other species staged a partial but less spectacular recovery: *Pararge megera* L., of which several of the first brood only were noted—it had not been seen there for about ten years, though not uncommon for a time before that—and *Augiades** *sylvanus* Esp., common right up to 1965, when it almost failed. The only other Hesperiid noted in the garden is a single *Thymelicus lineola* Ochs. (Essex Skipper) in 1964—a species which abounds not many miles east of here. *Pararge aegeria* L., of which I had already recorded one from the garden, has turned up singly three times since (1963-5); it would be interesting to know where they come from, but I see there is a record for Inner London (Lincoln's Inn Fields). *C. pamphilus* and *P. icarus* occur in the garden only as strays, but *Maniola jurtina* L. flourishes, seeming to survive every vicissitude unscathed. *Heodes phlaeas* L. appears in most years but in very small numbers as a rule; it is probably resident, however, as sorrel abounds in the garden. The Vanessids have all been declining steadily. Even this last season—a good one, I understand, for *V. cardui*—all I saw here of that species were one of the old and three of the new brood, and the last *V. atalanta* seen was one in the spring of 1965. *Polygonia c-album* L., quite frequent here from at least the mid '20s, has only very occasionally been noted in the past decade, but, when not seen at close range, may of course easily be confused with the next species. *Aglais urticae* L., formerly common, is now distinctly scarce; a few occur annually, of which usually one is found indoors (and not always between autumn and spring). Its larvae are no longer to be seen in local nettlebeds. *Nymphalis io* L. has been absent for so long that the appearance of a fresh one on 14.viii.65 was a welcome surprise. *Pieris napi* L. has for long been the commonest 'white' in the garden, at any rate since cabbages, etc., ceased to be grown there. To conclude with a few day-flying moths: *Zygaena filipendulae* L. has appeared very sparingly in each of the last 5 or 6 years at flowers of thistle, knapweed and golden-rod; they are perhaps strays from an inaccessible railway bank not far off. *Ectypa glyphica* L. is seen at the low rate of one

*I have seen it stated in a back number of the *Record* (which I cannot now trace) that the generic name *Ochlodes*, now in common use, was introduced for this species, *without any reason being given*, in place of the old established name *Augiades*. Such high-handed and arbitrary action is to be deplored on principle. Kloet & Hincks (1945) sink *Ochlodes* (1872) as a synonym of *Augiades* (1823).

about every other year, but the pretty little *Pyrausta aurata* Scop. maintains its numbers tolerably well, feeding larvally on mint (*Mentha spicata*). *Plusia gamma* L. has been specially abundant during the past season.

Surrey.—On Bookham Common, 29.iii.65, I was struck with the large numbers of butterflies—in strong contrast to so much recent experience, though the fact of its being the warmest March day for many years must have brought out all the hibernators. *Gonepteryx rhamni* L. and *N. io* were about equally plentiful, *A. urticae* and *P. c-album* less so. On 29th June, 1964, *Aphantopus hyperantus* L. was plentiful about some bramble thickets on Riddlesdown, near Purley. *Plebeius argus* L. was in very fair numbers on Thursley Common, near Hindhead, 23.vii.66, but only one *Eumenis semele* L. turned up—contrasting sadly with its abundance in similar areas in the same district that I remember seeing in 1925. From Carshalton Beeches, near Croydon, Mr. D. Collins reports a considerable number of *V. cardui* this year, mostly on his garden buddleia; *io, atalanta, urticae* and *c-album* all appear to be much commoner there than they are here. In or about 1957 he noted an *Argynnis paphia* L. (♂) on the buddleia—presumably a wanderer from Banstead Downs not far off, but none the less surprising from the absence of extensive woodlands in the vicinity. He saw several *A. aglaia* L. on two visits to Mickleham Downs this year. On Banstead Downs he has found very restricted colonies of *Lysandra coridon* Poda and *Cupido minimus* Fuess. Of other species not, or not now, occurring in my district, he sees *Euchloë cardamines* L. and *G. rhamni* each year in his own and adjoining parts of Surrey; often in good numbers, as this year.

Herts.—Mr Collins also reports seeing a specimen of *Colias croceus* Geof. at or near Bricket Wood, Watford, on 22.vii.66.—A. A. Allen, 63 Blackheath Park, S.E.3. 17.xii.66.

A Lincolnshire Record of Plusia gracilis Lempke.—Of the East Coast counties, records of *P. gracilis* Lempke have been published from Norfolk, Cambridge and Yorkshire, and in all three counties this species is considered to be associated with marshy areas. Records from other areas are less definite on this point. My short series of *'festucae'* from the Lincolnshire marsh region contains one male specimen of *gracilis* taken at light at Mablethorpe on 28th June, 1964, in a garden about a hundred yards from the sea. *'Festucae'* is an uncommon insect around Mablethorpe and only five specimens have been seen in the last eight years—two in June, one in July and two in September. G. W. Mason, in his List of Lincs. Lepidoptera (Trans. Lincs. Nat. Union, 1907-9) considers the species scarce but records a specimen taken at Theddlethorpe, some three miles from Mablethorpe, by Gibbs in 1904. It appears that both species are precariously established in east Lincolnshire.—T. R. New, Imperial College Field Station, Silwood Park, Sunninghill, Ascot, Berks. 30.xii.1966.

Some Diptera of Stanmore Common, Middlesex.—A note recently appeared in this magazine (1966, **78**: 238-9) by Mr P. Goddard, concerning Stanmore Common, in which one species of diptera was mentioned. During a field meeting of the South London Entomological Society, led by Mr Goddard on 31st July 1966, a number of uncommon diptera were taken.

A male of the small greyish fly *Chirosia albifrons* Tiensuu (Anthomyiidae) was swept from bracken. This species was first recorded as British by J. E. Collin (1955, *J. Soc. Brit. Ent.* **5** (3): 98) who stated that it had been "taken sparingly on bracken during May, June and July in Cornwall, Hants., Berks., Worcs. and Cambs." The specimen was determined for me by Mr D. M. Ackland, who tells me that he knows of no other records. All the species of *Chirosia* are associated with bracken, the larvae being either true leaf-miners or leaf-rollers; *C. albifrons* itself has apparently not been reared. Also taken on the same day was a female of the larger species, *Pycnoglossa flavipennis* Fln., a very distinctive blackish fly with yellow wings, which is closely related to *Chirosia*. Collin stated that this species is found throughout Britain, without being very common, and that its life-history is unknown; the adults are, however, always in association with bracken and I have found them in enormous numbers in Pett's Wood, Chislehurst, Kent, and smaller numbers in Pond Wood, Chistlehurst, in July. I also took a female on 6th September this year at Knole Park, Sevenoaks, and Mr G. Waller caught it in Lullingstone Park on 30th June 1966. Also at rest on bracken on Stanmore Common was the Muscid *Mydaea tincta* Zett.

A female of *Lyciella affinis* Zett. (Sapromyzidae) was found on an aspen trunk by Mr Goddard and given to me. This small yellow fly with a brownish shade at the tip of the wing was said by Collin (1948, *Trans. R. ent. Soc. Lond.*, **99** (5): 225-42) to be common in Scotland, but he could otherwise record it only from Cumberland, Suffolk and Cambs. Collin bred it in May 1908 from part of a rotten tree-stump collected at Chippenham Fen. Mr L. Parmenter informs me that he has also found the species in Dorset, Hants., Surrey and Sussex in the months of May to September. Also on a standing dead aspen trunk were found a pair in copula of the shining black Tipulid with yellow halteres, *Gnophomyia lugubris* Meig., a female of which I also found on 27th June 1966 outside Pond Wood, Chislehurst, flying along the bank of the stream flowing from the pond. This distinctive crane-fly has not often been recorded, and most specimens have been obtained by rearing larvae from rotten trunks and stumps. It was reared in numbers by H. Britten from Rostherne, Cheshire, by P. A. Buxton from Beaconsfield, Bucks. (the larvae in decaying poplar bark) and by C. H. Morley from pupae found in moss on a felled tree-trunk at Miserden, Glos. Other localities are Wood Walton Fen, Hunts. and Castle Howard, Yorks (F. W. Edwards); Mildenhall, Suffolk (Keilin) and Northants. Mr R. M. Payne tells me that he has never come across this species in Essex woods or elsewhere, and he considers that it must be very local.

A male of the rather local Syrphid, *Xylota nemorum* F. was swept from rushes in one of the many damp areas on the common, and another Syrphid, *Sphegina clunipes* Fln., a species which is not very frequent, but may be overlooked, was seen nearby. I have found both of these in Kent. A female of the uncommon Anthomyiid, *Pegomya fulgens* Mg. was found alighting on a fungus, *Boletus* Sp., fungi being the larval development medium. The *Boletus* was found to contain larvae and subsequently large numbers of *Fannia ciliata* Stein (Muscidae) and of the common *Mycetophila fungorum* Deg. (Mycetophilidae) were reared from it.

One visit on a dull day is clearly insufficient to obtain a good knowledge of the dipterous population of the common, but indicates that it may still support many interesting species. It was a frequent collecting-ground of Dr F. W. Edwards, as British Museum material indicates, and he described a number of new species of Nematocera from Stanmore specimens. The preservation of some quantity of bracken, of the damp birch woodland and especially of dead and dying birch and aspen wood in all stages of decay would appear to be essential for the survival of the species referred to above.—P. J. CHANDLER, 85 Chatterton Road, Bromley, Kent.

A SUPPLEMENTARY NOTE ON THURSLEY COMMON DIPTERA.—Since writing my paper on Thursley Common, some further species obtained during the two visits referred to, have been identified and several are worthy of addition.

Two males of *Pegomya fulgens* Mg. (Anthomyiidae) were swept from heather in pinewood on 28th May; this species, which I have recorded above from Stanmore Common, I have also found in Kent—Brook Wood and Scrogginhall Wood, Bromley, one female from each, on 26th August and 10th October 1964, respectively. It is therefore widely distributed, at least in S.E. England, and may be less uncommon than had previously been thought. Mr L. Parmenter tells me that he has found it in Dorset, Surrey and Suffolk. On 27th July one male of *Pegomya tenera* Zett, was caught while running about on the rhododendron leaves by the pond, this being taken with the same sweep of the net as *Xylota tarda* Mg. These *Pegomya* species were determined by Mr Ackland.

Also on the latter date, a male of *Leucophora grisea* Fln. (Anthomyiidae) was found sunning itself on low foliage above one of the numerous sandy paths; according to Collin (1920, *Trans. ent. Soc. Lond.*, 305-26) this is known from Scotland, Ireland, the New Forest and Studland, Dorset, but its extremely local occurrence is probably due to the larval development, this applying to other species of the genus also, the larvae feed on the pollen mass in the burrows of bees of the genus *Andrena*. This is not the first record of *L. grisea* for Surrey as it was taken at Oxshott by Mr R. W. J. Uffen (1963, *A.E.S. Bulletin*, 104).

One female of the Tachinid *Zenillia glauca* Mg., was caught on sunlit foliage. This species is said by F. van Emden (1954, *Roy. Ent. Soc. Lond. Handbks. Ident., Brit. Ins.* **10** (4a): 94) to be local in England (Kent, Gloucs., Oxon., Somerset, Warwicks.) but generally distributed in Scotland. The specimen does not entirely agree with the description given by van Emden as the bend of *m* is less distant from *m*—*m* than from the hind margin of the wing, thus aproaching the venation of *Z. glirina* (Rond.) Pand.

From a small portion of a *Boletus* sp. containing larvae, collected on 27th July in a small pine copse by the bog, three males of *Mycetophila confluens* Dz. (Mycetophilidae) emerged about the middle of August. This species was described by Edwards (1924, *Trans. ent. Soc. Lond.* **57**: 505-70) as "a rather rare species, occurring in Scotland and the New Forest." British Museum (Nat. Hist.) specimens are from Inverness and Aberdeen. There is no previous record of the rearing of this species which is easily distinguished from all other *Mycetophila* species by the two subdorsal bristles on the hind tibia and the reddish unstriped mesonotum.—P. J. CHANDLER, 85 Chatterton Road, Bromley, Kent.

(*V.C.H.* (1908)); common at valerian (Kershaw, *Entomologist*, **51**: 66); 1951 (E. J. Trundell); two, June-July 1963 (C.-H.). Chislehurst, two, July 1, 1904 (S. F. P. Blyth). Sidcup, a larva, February 29, 1920; one at light, July 27, 1927 (A. R. Kidner, *Diary*). Orpington, 1953 (L. W. Siggs). St. Mary Cray (R. G. Chatelain). Lee, one, 1960 (C. G. Bruce). Bromley, 1963 (4), 1964 (3), 1965 (5) (D. R. M. Long).

3. Herne Bay, occasionally (D. G. Marsh). Broad Oak, three at light, June 16-19, 1952 (C.-H.).

4. Deal* (T. Sorrell, *teste* Fenn, *Diary*). Ickham, many, 1954-59 (D. G. Marsh).

5. Chevening, one, July 1913; July 5, 1917 (Gillett, *Diary*). Halstead, July 15, 1925 (Frampton, *Entomologist*, **59**: 173). Chelsfield, 1949 (A. M. Swain). Westerham, frequent, and numerous in 1959; particularly numerous at light in 1964 with about 100 in the m.v. trap on June 30 (R. C. Edwards).

6. Greenhithe* (Farn MS.). Gravesend, scarce (H. C. Huggins). Pinden (E. J. Hare).

6a. Darenth Wood (see *First Record*); (Curtis, *Br. Ent.*, 731). Rochester* [Cobham], moderately abundant (1897) (Pye, *Ent. Rec.*, **9**: 266).

7. Wigmore Wood, not very common (Chaney (1884-87)). Boxley, 1953 (A. H. Harbottle). Westwell (Scott (1936)).

8. Elham, one, June 14, 1925, in Elham Park Wood; one, August 3, 1925, one at acetylene light, July 4, 1926 (W. E. Busbridge, *Diary*). Dover (E. & Y. (1949)); common, 1954 (B. O. C. Gardiner). Whitfield, numerous, 1953 (Wakely, *Ent. Rec.*, **66**: 109; idem, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1952-53: 26). Betteshanger, July 6, 1957 (R. F. Bretherton). Brook (C. A. W. Duffield); July 3, 1951 (H. King). Barham (E. & Y. (1949)). Stowting (C. A. W. Duffield). Wye (Scott (1936)).

9. Birchington, one, 1919; Kingsgate, two on knapweed, July 17, 1920 (H. G. Gomm coll.).

10. Brasted (R. M. Prideaux).

11. Tonbridge, one (Raynor, Entomologist, **6**: 79). Tonbridge district, 1911 (Rattray, *Entomologist*, **45**: 80). Wateringbury (*V.C.H.* (1908)); many in E. Goodwin coll. (C.-H.). Yalding (*V.C.H.* (1908)). Shipborne, one, 1910 (P. A. & D. J. A. Buxton coll.). Near Maidstone, 1899 (Gandy, *Entomologist*, **32**: 279). Maidstone, woods behind Vintners Park, not uncommon (F. T. Grant). Aylesford, c. 1953 (G. A. N. Davis). Sevenoaks Weald, two, June 18-21, 1959; nine, June 15-July 19, 1960 (E. A. Sadler).

12. Chartham, five, 1949, one, 1951 (P. B. Wacher). Ham Street.—Birchett Wood, one, July 1951 (C.-H.); June 24, 1953, July 1955, June 30, 1956 (W. L. Rudland). Ashford Town, c. 1953 (P. Cue). Willesborough, three, June 20-July 15, 1954, nine, July 6-30, 1955, eighteen, July 8-27, 1956, thirty-three, June 18-July 18, 1957, ten, June 29-July 20, 1958, nineteen, July 2-28, 1963, twenty-six, June 17-July 31, 1964 (W. L. Rudland); fairly common, 1961 (M. Enfield). Wye, five, June 23-July 24, 1953, twelve, June 23-August 5, 1954, twelve, June 12-August 9, 1955, fifteen, July 6-August 9, 1956 (W. L. Rudland). West Ashford, 1958 (M. Enfield).

13. Tunbridge Wells, 1891 (Beeching, *Ent. Rec.*, **2**: 229); (E. D. Morgan). Goudhurst, common, including ab. *percontationis* Tr. (W. V. D. Bolt).

14. Tenterden (Stainton, *Man.*). Sandhurst, at valerian (G. V. Bull).

15. Dymchurch, one, 1952 (Wakely, *Ent. Rec.*, **65**: 44).

16. Folkestone Town, one ab. *percontationis* Tr., 1952 (Morley, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1952-53: 42).

VARIATION.—Ab. *percontationis* Tr. appears to be less numerous than the type, but is nonetheless of fairly frequent occurrence; I have one, taken by G. V. Bull at Sandhurst, July 7, 1937 (C.-H.).

FIRST RECORD, 1830: "Found in the lanes near Darenth-wood" (Stephens, *Haust.*, **3**: 102).

P. pulchrina Haw.: Beautiful Golden Y.

Native. Woods, copses; foodplant unknown.

1. Priestlands Wood, Sidcup, ♀, 1896 (G. H. Hickling & H. E. Page MS.). Sidcup, July 1903 (Clarke, *Entomologist*, **36**: 291); one, June 17, 1911 (A. R. Kidner). Chislehurst, two, June 20, 1905, one, June 26, 1906, two, June 1908, one, June 21, 1909, two, June 9, 1910 (S. F. P. Blyth). Bexley (L. W. Newman, in *Wool. Surv.* (1909)). Orpington; Farnborough (W. Barnes, in *Wool. Surv.* (1909)). West Wickham, common at valerian, 1917 (Kershaw, Entomologist, **51**: 66); one ab. *percontatrix* Auriv., in Well Wood, June 10, 1949 (C.-H.); 1952 (de Worms, *Lond. Nat.*, 1955: 68). Abbey Wood, 1952 (A. J. Showler). Orpington (R. G. Chatelain). Lee, odd specimens (C. G. Bruce). Bromley, one, July 13, 1963, one, June 19, one, July 7, 1965 (D. R. M. Long).

2. Plumstead Marshes (de Worms, *loc. cit.*).

3. Herne Bay (D. G. Marsh).

4. Ickham, many, 1954-59 (D. G. Marsh).

5. Chevening, June 1, 1912, June 8, 1916 (Gillett, *Diary*). Halstead (R. E. Frampton, *teste* S. Wakely). Westerham, frequent, numerous in 1959 (R. C. Edwards).

6. Pinden, one, 1951 (E. J. Hare). Eynsford, June 19, 1960 (R. G. Chatelain).

6a. Darenth Wood (Stephens, *Haust.*, **3**: 101). Rochester* [Cobham], moderately abundant (1897) (Pye, *Ent. Rec.*, **9**: 266). Chattenden Roughs (Chaney (1884-87)). Dartford* (*V.C.H.* (1908)).

7. Wigmore Wood (Chaney, *loc. cit.*). Westwell, June 4, 1952; 1953 (E. Scott). Challock (Scott (1964)).

8. Dover, one at electric light, June 19, 1895 (H. D. Stockwell, *Diary*). Folkestone* (Ullyett (1880)). Stowting (C. A. W. Duffield). Wye (Scott (1936)). Brook (C. A. W. Duffield); 1951 (H. King); 1961 (de Worms, *Entomologist*, **95**: 101). Betteshanger, July 6, 1957 (R. F. Bretherton).

10. Brasted (R. M. Prideaux). Sevenoaks, 1919 (Gillett, *Entomologist*, **53**: 23); one, 1946, one, 1948 (F. D. Greenwood).

11. Yalding (*V.C.H.* (1908)). Wateringbury (*V.C.H.* (1908)); many in E. Goodwin coll. (C.-H.). Maidstone, woods behind Vintners Park, not uncommon (F. T. Grant). Tonbridge district (Rattray, *Entomologist*, **45**: 80). Edenbridge, one, July 6, 1932, one, 1933 (F. D. Greenwood). Aylesford (G. A. N. Davis). Hoads Wood, c. 1953 (P. Cue); one, June 15, 1955 (W. L. Rudland). Maidstone, one, June 15, 1957 (E. Philp). Sevenoaks Weald, three, May 27, 28, June 18, 1959; two, June 17, 21, 1960 (E. A. Sadler).

12. Lenham, 1922 (H. C. Huggins). Ham Street.—June 18, 1934 (A. J. L. Bowes); several worn at m.v.l., in Birchett Wood, including one ab. *percontatrix* Aur., June 21-27, 1952; one, June 29, 1956 (C.-H.); June 24, 1953, June 30, 1956 (W. L. Rudland); July 8, 1958 (de Worms, *Entomologist*, **92**: 71); June 10, 1960 (R. G. Chatelain). Ashford Town, c. 1953 (P. Cue). Willesborough, July 20, 1954 (1), June 20-July 10, 1955 (2), June 11-25, 1956 (2), June 22, 1957 (1), June 21-28, 1958 (2), July 2-22, 1963 (2) (W. L.

Rudland); one, 1961 (M. Singleton). West Ashford, two, 1961 (M. Singleton). Wye, June 21 (3), July 10 (1), 1954, June 23 (3), July 12 (1), 1955, May 31, 1956 (1) (W. L. Rudland).

13. Tunbridge Wells, 1891 (Beeching, *Ent. Rec.*, **2**: 229); (E. D. Morgan); occasional, 1956-59 (L. R. Tesch, *per* C. A. Stace). Goudhurst, common, including ab. *percontatrix* (W. V. D. Bolt).

14. Sandhurst, at valerian (G. V. Bull).

16. Shorncliffe, one, July 1902 (J. P. Barrett coll.). Folkestone, singletons at m.v.l., July 2, 1952, June 6, 1957, June 18, 1958 (A. M. Morley). Sandgate, one, 1961 (N. Reay-Jones).

VARIATION.—Ab. *percontatrix* Aurivillius, is of frequent occurrence but not so numerous as the type, at least not in my experience (C.-H.). Morley (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1959: 43) exhibited one, taken Folkestone, June 20, 1959, and described as "ab. *v-aureum* Hübn., a male of the dark northern form . . . and similar to some taken at Aviemore" (presumably *v-aureum* Guen. (C.-H.)).

FIRST RECORD, 1830: Stephens, *loc. cit.*

P. ni Hübn. (**brassicae** Ril.): Ni.

Immigrant.

1958: Westerham (div. 5), one taken by R. C. Edwards in m.v. trap on May 18, and exhibited (Edwards, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1958: 25). Ashford (div. 12), one taken at light by P. Cue in his garden, August 18 (French, *Entomologist*, **92**: 175). [Bexley, 1952 (*Ent. Rec.*, **64**: 146, *Entomologist*, **86**: 51), was never satisfactorily confirmed (C.-H.).] [(Wye, 1955 (*Entomologist*, **89**: 176), based on wrong determination, refers to *P. interrogationis* L. (*q.v.*) (C.-H.).)]

FIRST (CONFIRMED) RECORD, 1958: Westerham (R. C. Edwards).

P. confusa Steph. (**gutta** Guen.): Dewick's Plusia.

Immigrant.

1954: Ashford Town (div. 12), one taken, October 4, at rest on a fence, by P. Cue, and exhibited (Cue, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1954-55: 23, plt. 1, fig. 4; French, *Entomologist*, **88**: 128, **89**: 176. The latter reference gives the date 1955 in error (C.-H.)).

1955: Ickham (div. 4), ♀, taken August 20, at m.v.l., by P. B. Wacher (C.-H., *Ent. Rec.*, **68**: 53).

FIRST RECORD, 1954: Ashford (P. Cue).

P. gamma L.: Silver Y.

Immigrant. Waste places, gardens, lucerne and clover fields, etc.; on *Senecio viscosus, Ballota nigra, Linaria vulgaris, Centaurea scabiosa, Medicago sativa, Chenopodium, Matricaria, Atriplex,* "clover, nettles, thistle", *Ononis arvensis,* hop. In all divisions, and doubtless present from time to time everywhere in the county; indeed, in some seasons perhaps the most generally distributed and abundant noctuid. "Generally abundant" (*V.C.H.* (1908)).

The moth is most partial to flowers, especially *Kentranthus,* lucerne, clover, Petunia, lavender; but is not often seen at sugar, and then only singly as a rule, though according to Fenn (*Ent. Rec.*, **5**: 300) it was "very common at sugar" at Deal in 1894. It also occasionally comes to ivy bloom, F. T. Grant having noted it at this at Chalk, October 14, 1911.

There are records of the moth for Kent for every month from May to

December, with optimum numbers normally in September; it has also probably been noted very occasionally in March and April, but I have been unable to trace any such occurrences. In 1951, it was seen at Sheerness on December 2 (Dannreuther, *Entomologist*, **84**: 89); and in 1956, W. L. Rudland observed it at light at Wye as late as December 6.

Despite the fact the moth is seen annually, it is doubtful whether the species can establish itself here for any length of time, though it is possible it may occasionally survive a winter. For instance, Danreuther (*Entomologist*, **84**: 89) says, that from a Blackheath pupa found in 1950 on April 15, an imago emerged May 9, thus indicating winter survival.

Occasionally the moth is seen in vast numbers. Thus, Adkin (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1890: 77) noted it at Deal, flying upwards in myriads from standing corn, so suggesting an initial migration; and Grant (*S. east. Nat.*, **42**: 99-106) records a similar phenomenen witnessed by L. W. Newman. One of the most remarkable invasions on record took place at Ickham on the night of September 18-19, 1961; on that occasion, D. G. Marsh estimated there were some 25,000-30,000 *gamma* in his garden in and about his m.v. trap (D. G. Marsh, *pers, comm.*; also, cf. Marsh, *Ent. Rec.*, **74**: 52).

I have taken the larva on *S. viscosa* at Dungeness, and on *C. scabiosa* on the rough chalky ground adjoining Ham Fen (C.-H.); it has been taken on *B. nigra* at Blackheath (A. A. Allen); on *L. vulgaris* at Dungeness (B. K. West); on *Chenopodium* at Strood (Ovenden, *Ent. Rec.*, **21**: 33); and on *O. arvensis* at Deal, from which the moth emerged August 28, 1875 (Fenn, *Diary*). H. G. Gomm (*Diary*) records finding eight cocoons at Ebbsfleet, September 14, 1920, "spun up between leaf tips of lucerne", from which he reared the moths in September-October of that year. The larva has also been noted on *Matricaria*, at Beckenham (Miller, *Ent. mon. Mag.*, **28**: 287); on *Atriplex*, in Sheppey (Cockayne, *Ent. Rec.*, **65**: 194); on "clover, nettles, thistle, etc." [at Maidstone] (Whitehead, *per* Porritt, *Ent. mon. Mag.*, **28**: 255); and on hop in the Tunbridge Wells district (C. A. Stace).

Variation.—Cockayne (*Ent. Rec.*, **65**: 193-195) dealt at length with a form which he bred from very dark larvae taken on Sheppey in 1899. These moths he described as "very small, pale, and silvery, with none of the rich purplish or brown colour of normal *gamma*"; and suggested they might represent a distinct subspecies.

Morley (*Ent. Rec.*, **65**: 24) recorded that of 200 *gamma* taken at Folkestone in 1952, the percentage of the "typical grey form", decreased from 92% in May and June, to 50% in July, to 35% in August, and to 27% in September; and the same recorder exhibited (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 36) from Kent, a "pink form", a "dark form", and ab. *gammina* Stgr.

Of the ab. in which the tail to the Y is missing, Marsh (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1954-55: 39) exhibited a ♀ and ♂, taken at Ickham, July 18, 29, 1961, respectively; and another of this ab. from Kent, was exhibited by Morley (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 36).

First Record, 1860: Deal (Harding, *Ent. week. Int.*, **9**: 27). But doubtless first noticed in the county long before.

P. interrogationis L. ssp. **cinerea** Warren: Scarce Silver Y.

Immigrant. Three examples only; all in 1955.

EXCHANGES AND WANTS

Wanted.—Part 6, Vol. 4: Parts 2, 3, 7 and 8, Vol. 5; Part 1, Vol. 15; of "The Entomologist's Record".—*State price to Box 172, 'The Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

Wanted.—The Editor would be willing to buy a few clean, unbound, copies of the following at published prices: Vols. 5, 33, 35, 36, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57, 62, 63, and 77.—*Replies to S. N. A. Jacobs, 54 Hayes Lane, Bromley, Kent.*

Wanted Urgently.—Vol. 77 of "The Record", January and February issues (good price paid).—*Box No. SA 1246, "The Entomologist's Record", 59 Gurney Court Road, St Albans, Herts.*

Wanted.—Second-hand Robinson mercury vapour moth trap, preferably with bulb and ancillary equipment.—*J. M. Chalmers-Hunt, St Teresa, Hardcourts Close, West Wickham, Kent.*

For Sale.—Bound Volumes, Nos. 7, 8, 9, 10, 11, 12 and 13, 'Entomological Record', excellent condition; what offers?—*Box SK669, 'Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

For Sale.—Formosan Butterflies, Moths, Beetles, Cicadas, Dragonflies and other dried insect specimens as well as colourful ferns and leaves for collection, study and decoration.—*Taiwan Novelty Co., P.O. Box 860, Taipei, Formosa, Free China.*

For Sale.—Fourteen-drawer Cabinet by Watkins & Doncaster, size of drawers 17″×15″×2″ deep, glass lockable door, drop-in glass-framed lids; also numerous Butterfly Books, Pill Boxes, Kite Net, assorted Cork Setting Boards, and one 14″×10″ Mahogany Exhibition Case (needs repapering).—*A. M. Freebrey, 29 Springfield Gardens, Upminster, Essex.*

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L. F. HERSALEH to P.O. Rockyridge, Uitenhage, Cape Province, South Africa.

H. E. CHIPPERFIELD to "The Shieling", Palmers Lane, Walberswick, Southwold, Suffolk.

A. D. IRVIN to 10 Manor Crescent, Compton, Newbury, Bucks.

E. RICHARDS to 152 Holgate Road, York.

R. M. PAYNE to 'Westwood', Highwalls Avenue, Dinas Powis, Glam.

C. P. STURGESS-LEIF to 14 Compton Street, London W.1.

THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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TO OUR CONTRIBUTORS

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

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Photo : H. N. Wykeham.

Poecilmitis felthami dukei subsp. nov.

Fig. 1. ♂ Holotype (upperside). Fig. 2. ♂ Holotype (underside).
Fig. 3. ♀ Allotype (upperside). Fig. 4. ♀ Allotype (underside).

A new subspecies of the Cape Lycaenid *Poecilmitis felthami* (Trimen)*

By C. G. C. Dickson

**Zeritis felthami* Trimen, Trans. ent. Soc. Lond., 1904, p. 233, pl. 19, figs. 2, 2a.

This is a small race which has been found in several localities to the east of Cape Town, and differs consistently in several respects from *P. felthami felthami*. A short description of it is given hereunder.

Poecilimitis felthami dukei subsp. nov.

Male.

The forewing is more convex along the costal margin than is usually the case in the nominate race.

Upperside.

Forewing. Area 1b normally without any black spotting apart from the black submarginal marking (one to three spots are often present in area 1b, in the nominate race).

Hindwing. Black spotting of postmedian series always incompletely developed, especially in areas 2 and 3; the spot in area 4 the largest of the series. Submarginal marking above vein 4 in the form of a solid broad streak not broken up into separate spots; the submarginal spots in areas 2 and 3 very often minute or absent (this sometimes being so in the nominate race also), but one in area 1c near anal-angle always present and often quite of normal size. There is no dark streak closing cell, as is frequently the case in typical *P. felthami*.

Cilia often lighter, intermittently, than in nominate race, but in some examples equally dark.

Underside.

Forewing. Submarginal and subapical (and, to some extent, costal) areas more fawn-coloured than in typical *P. felthami*.

Hindwing. More fawn-coloured than in nominate race and its outer half with a broad pale zone of an almost whitish tint, but with a diffuse warm-brown patch within this zone in areas 4 and 5.

Length of forewing: 10-12·5 mm. (11·25 mm., in holotype).

Female.

The costal margin tends to be more convex in this sex, too.

Upperside.

Forewing. The very small spot in cell which may be present in nominate race**, and first spot from base in area 1b, absent in present race. Submarginal black border without (or virtually without) orange markings between it and wing margin, near apex.

Hindwing. Spots on main surface present as in nominate race apart from spot, or streak, closing cell; those of postmedian series in areas 2 and 4 always larger than the rest. A solid black streak submarginally above vein 3, as in the male; the submarginal spots below this point tending to be somewhat reduced in size, but the one near anal-angle always

**There is no such spot in the ♀ allotype of *P. felthami felthami*, or in any of the three other females in the collection of the British Museum (Natural History). (G. E. T.)

well developed.

Cilia as in male and varying in different specimens.

Underside.

Both wings essentially as in the male.

Length of forewing: 12·25-13·5 mm. (13 mm., in allotype).

In both sexes the underside of the body and the legs are distinctly lighter and more whitish than in the nominate race.

♂ Holotype, CAPE PROVINCE: Roodeberg near Vink, Robertson Karroo, 24.xi.1966 (*C. G. C. Dickson*), B.M. Reg. No. Rh. 18517,

♀ Allotype, data as holotype, B.M. Reg. No. Rh. 18518.

Paratypes presented to British Museum (Natural History), CAPE PROVINCE: as holotype, 24.xi.1966, 1♂ 1♀; 15.iii.1965, 5♂ 3♀; 21.iv.1964, 2♂.

Paratypes in the author's collection, CAPE PROVINCE. as holotype, 1♂; 12.x.1950 (and *A. J. H. Duke*), 2♂; Montagu Baths, iii.1927 (*C.G.C.D.*) 1♀; Bosch Kloof, foot of Kwadouws Mountains, 23.xii.1963 (*C.G.C.D.*) 1♀

The differences which are apparent in this butterfly are sufficiently marked as to suggest the possibility of its eventually proving to be a separate species. When comparing the male genitalia of the two butterflies some difference has been observed in at least the aedeagus, juxta and valves, while the relative proportions of some of the parts of the genitalia have not been quite the same in each insect.

It was first realised that this insect was distinct from *P. felthami felthami* when Mr. A. J. H. Duke and the writer each secured a male specimen on one of the rocky foothills of the Roodeberg, not far from the Worcester-Mossel Bay railway line, on the date given above. In this spot the butterfly seems to be very localised, but occurs in some numbers where it is found, flying actively for short distances close to the ground and often alighting on the ground or the low scattered shrubs of Karroo type which are present here.

Specimens which were procured at Still Bay by Mr. K. M. Pennington appear to have much in common with the Roodeberg ones.

Notes on the early stages of the typical race, with figures, by the late Gowan C. Clark and the present writer, were published in the Annals of the South African Museum, Vol. XXXII, Pt. 6, 1940.

The writer is greatly indebted to Mr. G. E. Tite for perusing the manuscript before its publication.

"Blencathra", Cambridge Avenue, St. Michael's Estate, Cape Town.

Notes on Entomological Excursions during 1966

By S. Wakely

These notes are arranged in chronological order and are an account of the more successful and interesting of my entomological excursions during the year 1966.

April 23.—The South London Entomological and Natural History Society held a field meeting to Ockham Common on this date which I was pleased to attend. Although rather early in the year, a search was made for the larvae of *Parascotia fuliginaria* L. and it was not long before we were successful. They were found under fallen fir trees and old logs,

and, in spite of their small size, P. A. Goddard managed to take some nice photographs of this local and unusual species. A few of the old firs on the Common have colonies of *Laspeyresia coniferana* Sax. on the bark of their trunks which can be detected by the lines of extruded frass and slight webbing in the crevices. After some tedious digging into the deep ridges about half-a-dozen larvae and pupae were extracted and some weeks later I succeeded in breeding two of the moths.

May 2.—Through the kindness of E. A. Sadler and P. J. Rogers, I was able to visit Dungeness on this date. They were kind enough to call at my house and pick me up in the morning and also bring me back in the early hours of the 3rd. On the way, it was decided to look for larvae of *Hypercallia citrinalis* Scop. on the downs near Wrotham, Kent. It was early in the year for this species to be found but I suggested picking a few flower buds in the hope that they would be harbouring minute larvae. These flowers of *Polygala vulgaris* (Milkwort) were wrapped in tissue and kept in a plastic container. When examined a week later by Mr. Sadler he found one small larva which spun part of the foodplant to the paper. I was able to augment this with seven more larvae which I found at the same place on the 13th May. When small, the larvae show no sign of their presence on the milkwort, but can be detected later as they often spin two flower-heads together or distort the stem by their spinning, causing the plant to bend over as it grows and the webbing restricts it. After this diversion, we lost no time in pushing on to Dungeness. Meeting R. Cook near the Lighthouse, we had a talk and decided to go to Greatstone along the coast road. Here numerous small larvae of *Leucoma salicis* L. were found both on the leaves and trunks of small trees of *Populus nigra* growing by the road on the sand dunes. Retracing our route we stopped at Lydd-on-Sea Halt to examine some plants of *Silene nutans*. Mr. Sadler took a root home and planted it in his garden, and later found several larvae of *Coleophora otitae* Zell. feeding on the leaves. Although often common at Dungeness, this species has not been recorded from any other locality in the British Isles. We then journeyed to Denge Marsh, further along the coast to the West. Near the old Hope and Anchor Inn site numerous larvae of *Dasychira fascelina* L. were found on broom and blackthorn, but not a sign of any larvae of *Lasiocampa trifolii* Schiff. could be found either here or at Dungeness. After this, we returned to the Lighthouse. A large clump of tansy was searched for larvae of *Platyptilia ochrodactyla* Schiff. Many imagines had been seen on the plants the previous summer, and it was not long before we located the larvae. They were quite small and were found in the axil of the leaf with the stem. Slight webbing was noticeable with particles of fine frass. A few larvae were taken by Mr. Sadler, together with a root or two, and he eventually bred one moth. Some old seed-heads of *Centaurea nigra* were collected and these produced a number of *Metzneria metzneriella* Staint. during July and August. A small series of *Douglasia ocnerostomella* Staint. were bred from dead stems of Viper's Bugloss collected at random by Mr. Sadler. As it got dark a m.v. light was set up to run from a generator. The weather was fine but nothing of note was taken at light and we did much better by searching the herbage for larvae with the aid of hand-lamps. Larvae of *Lasiocampa quercus* L. were quite common and showed up well in the light beams, stretched along the twigs of broom and blackthorn. A few larvae of *Aporophyla australis* Boisd. were found

on grass and sorrel and larvae of *Eumichtis lichenea* Hübn. were taken feeding on Red Valerian (*Centranthus ruber*).

May 5.—Meeting Messrs Sadler and Rogers at Dorking North Station, we all started on another entomological trip, starting off with a visit to Abinger, Surrey, to see if *Xanthorhoe biriviata* Borkh. was on the wing. Walking about, tapping the branches of trees, we disturbed and netted a few, but more were taken later in the day when my friends visited the spot again on their way home. Moving on to the higher ground by Abinger Common we all collected spun tips of bilberry (*Vaccinium myrtillus*). These were wrapped in tissue paper and kept in plastic boxes. After a week the material was examined and any larvae found transferred to fresh food. In this way a number of different species were reared and included *Hydriomena furcata* Thunb. (the commonest species present), *Oporinia dilutata* Schiff., *Chloroclystis debiliata* Hübn., *Apotomis sauciana* Frol., etc. Our chief desideratum was *C. debiliata*, but our combined efforts produced only three moths. Leaving Abinger, we proceeded via Effingham Lane and Bookham to Ockham Common, where 17 larvae of *Parascotia fuliginaria* L. were found from which eventually a dozen moths were bred. Mr. Sadler tells me that a female which he bred had conspicuous green eyes which turned golden after death. We later went on to Byfleet via Wisley where we found plenty of larvae and pupae of *Elachista poae* Staint. on *Glyceria maxima* on the banks of the canal. Horsley Common was next visited and from a bag of fir cones collected from some small trees a series of *Laspeyresia conicolana* Heylaerts were bred a few weeks later. One has to collect the cones and hope for the best as there is no mark to denote the presence of a larva. My friends then took me to Effingham Station, where I was able to catch a train back home. While waiting for the train we took a few larvae of *Caryocolum fraternellum* Dougl. which occurs regularly in spun shoots of *Stellaria graminea* near the station.

May 19.—Colonel A. M. Emmet invited me to go with him to Wicken Fen, Cambridgeshire, on this date and I was particularly pleased as it was a place I had not had the good fortune to visit previously. One of the species we were keen on finding was the larva of *Sorhagenia rhamniella* Zell., the first authentic British specimens of which had been taken by Colonel Emmet the previous year (*Ent. Rec.*, **78**, 1966: 9-11). The foodplant of this species is unknown, and we were keen on finding the larvae. *Rhamnus carthartica* and *Frangula alnus* are both very common trees on the Fen and *F. alnus* seemed the most likely. Plenty of spinnings were found on this tree but the larvae were found on emergence later to be *Archips rosana* L. There were also plenty of terminal shoot spinnings on *R. carthartica*, and these proved to be *Sorhagenia lophyrella* Dougl., a number of moths being bred later and checked by Mr. J. D. Bradley. Presumably we were too early for the larvae of *S. rhamniella* and it is hoped to have another search for this elusive larva another year at a later date. On leaving Wicken Fen, we went to Tuddenham, Suffolk, where a profitable time was spent searching the branches of larch trees. Two species of lepidoptera were taken here which were additions to the Suffolk records. These were *Pandemis cinnamomeana* Treits., which was bred from a larva found in a tubular web among the needles, and *Blastotere laevigatella* H.-S., several larvae of which were found in shoots of larch, their presence being betrayed by the withered tips. Colonel Emmet was lucky enough to find a pupa

of *Laspeyresia zebeana* Ratz. in a small gall on a larch shoot at Elveden. The shoot had divided into two and the pupa was in a slight swelling just at the fork. This species is very difficult to find, in spite of the gall, and has been recorded only from this area in Britain.

May 20.—After a rest from the previous day's exertions, I enjoyed the hospitality of Colonel Emmet at his house at Saffron Walden, Essex. We set out the following morning on a long trip to Derbyshire. This was a memorable trip to a part of Britain which was completely new to me. Our main purpose was to visit Great Hucklow and the surrounding moors and collect some of the Vaccinium-feeding lepidoptera. We eventually parked the car at one of the highest parts of the county where there was a quantity of *Vaccinium vitis-idaea* (Cowberry) growing under the shelter of a stone wall, one of many such walls which are quite a feature of the district. We soon found that the Cowberry abounded with larval spinnings and quickly set to work snipping off the spun shoots and flowers with scissors. Several different species of larvae were noticed to encourage our efforts. Occasionally a larval case of *Coleophora vitisella* Gregs. was added to the bag. One or two mines of *Fomoria weaveri* Staint. were also found. *Vaccinium myrtillus* was growing in abundance all around us but *V. vitis-idaea* was much more local, and was a plant I had never seen growing previously. Another plant that was seen here was the beautiful *Viola lutea* (Mountain Pansy) with its bright yellow flower about an inch across. A few spinnings on *V. myrtillus* were also collected by me and from the two species of *Vaccinium* the following species were subsequently reared: *Amelia viburnana* Schiff., *Acleris caledoniana* Steph., *Rhopobota ustomaculana* Curt. (very common), *Ancylis myrtillana* Treits., *Apotomis sauciana* Frol., and *Olethreutes mygindana* Schiff. (common). On our return a detour was made to visit the lovely picturesque Dovedale, but our short visit produced nothing of entomological note, and then the long journey back to London was commenced.

June 24—The South London Entomological and Natural History Society and the Kent Field Club combined forces on this day to visit a large chalk pit near Maidstone, Kent. Among the insects I was hoping to see on this occasion was the Clearwing, *Dipsosphecia scopigera* Scop., which report said was often to be taken there by sweeping. Special permission had been obtained for our visit and the entrance to the pit was negotiated with difficulty down an overgrown series of cement steps apparently made for the use of workmen many years before when the pit was being worked. Sweeping was soon in progress and sure enough this very local Clearwing was soon found. My own "bag" was two, but I understand that several others were captured by the party. There is an interesting note on this species by C. G. Barrett in the *E.M.M.*, 1876, p. 182, who came across it in Pembroke. He stated that the only way to get them was to sweep, "and this was useless until after 6 p.m." He also said that its flight was crepuscular and had a notion that it flew at an inconveniently early hour in the morning. Other species taken included *Oxyptilus parvidactyla* Haw. and larvae of *Eremobia ochroleuca* Schiff., both by sweeping.

July 9.—Another visit was paid to the chalk pit near Maidstone. This time R. Fairclough was with me and we decided to see if the species of Clearwing mentioned in the previous paragraph was more easily captured in the late afternoon and evening. Soon after our arrival we

got one specimen each of *D. scopigera*, but no more were encountered after sweeping for several hours.

July 23.—Colonel Emmet visited me at Camberwell and we went out in his car on a tour of local entomological localities. We started with a visit to Tooting Bec Common to try and find *Blastodacna stephensi* Staint. which I used to take there some years previously. After a good search on the trunks of some ancient oak trees we managed to find about half a dozen moths. Then we made our way to Bookham Common, where we found larvae of *Mompha schrankella* Hubn. feeding in the small leaves of a species of *Epilobium*—probably *E. roseum*—which grows locally round the edges of the ponds there. Leaving here, our next stop was Wisley Common where the birches were searched for the larvae of *Caloptilia populetorum* Zell. This species is usually fairly plentiful on the Common. The larva folds the birch leaf in a characteristic fashion by rolling the right and left sides of the leaf towards the centre rib, whereas the more common *C. betulicola* Her. rolls the leaf downwards from the apex, forming a tube. A small series of moths were reared a few weeks later from the leaves gathered. Our last visit before returning home to Camberwell was to Abinger to see if *Xanthorhoe biriviata* Borkh. was on the wing. A single specimen was taken in fresh condition which rounded off nicely the day's captures.

July 24.—The original intention of Colonel Emmet and me was to go to a field meeting at Folkestone Warren on this date, but owing to a minor breakdown in the car it was decided not to embark upon such a long journey. However, we did manage another entomological excursion—to Dulwich Park about a mile from my house. This used to be a good locality for *Blastodacna stephensi* Staint. and it was soon evident that it still is. The larva of this local species feeds in the bark of ancient oak trees and the imago rests by day in the crevices of the bark. It emerges over a long period in July and on this occasion one was found which had just emerged and was in the process of drying its wings over its back. About 20 specimens were found in an hour and it was pleasing to know the species still holds its own in a London park.

August 26.—Colonel Emmet, R. Fairclough and I decided to visit Cosford Mill on this date to search for the larvae of *Caloptilia falconipennella* Hübn. Meeting the owner of the land, Mr Loarridge, we were given permission to wander round his land and search for any larvae we wanted to find. Searching the alder trees growing round the lakes we soon found leaves with turned-down edges which are the characteristic feeding places of the larvae of *C. falconipennella* (*Ent. Rec.*, 1966, pp. 49-50). Then we found a few coccoons which were more difficult to detect as the extreme edge only of the leaf is curled underneath almost hiding the whitish silk covering the pupa. One was found with an extruded empty pupa-case showing that one at least of the moths had already emerged. However, we were all fortunate in finding about 10 larvae each. Successful breeding of the moth was difficult and I eventually bred six specimens, which was a little better than that of my friends.

September 11.—This was the date of another meeting of the South London Society and the Kent Field Club, this time at the Ham Street woods, Kent. Our collecting was confined to Faggs Wood. A few larvae of *Ancylis mitterbacheriana* Schiff. were found on oak. This larva spins an entire oak leaf together at the edges, forming a pod. Some of the

larvae had just started this engineering feat and it was very interesting to see how it was accomplished. A good deal of strength is required to bring the two edges of the leaf together so the larvae spin a number of strands of silk together across the two sides of the leaf over the centre rib, forming a "cord". These stout cords are spaced along the leaf centre about 2 mm. apart and the shrinking of the silk draws the leaf upwards so that the two outer edges tend to curve upwards and go together. Once this has happened the sealing of the extreme edges is accomplished by normal strands of silk being spun to each edge and allowed to contract as in the more usual larval spinning. A larva I found on aspen was thought to be that of *Nephopteryx hostilis* Steph., one of the Ham Street specialities. It was in a brown leaf which was spun to a fresh green leaf with silk threads. The largish brown larva fed on aspen and black poplar leaves and when not feeding rested well hidden in the old curled brown leaf in which it was found and in which was a silken tube. It is hoped to breed this larva and determine its true identity.

September 18.—This day was chosen for a trip to the salterns near Faversham, Kent, and we hoped to take some of the local autumn larvae to be found there. I went by train to Eynsford, Kent, where I was met by Colonel Emmet and R. Fairclough. Arriving at Faversham, a visit was paid to the harbour. One of our objectives was to try and breed the larvae which feed in the seeds of *Peucedanum officinale* (Hog's Fennel), a very local umbellifer which grows in quantity in the district. I had found larvae the previous year but had failed to rear any, and as the food-plant was unusual it was of great interest to know the identity of the moth. The larvae were fairly common so we hope to be able to find the answer to their identity next year. Returning to the cars parked on the quayside, we noticed a clump of *Artemisia vulgaris*. Feeding in the stems of this plant were a number of larvae of *Ostrinia nubilalis* Hübn., their presence being betrayed by the large amounts of extruded material on the sides of the stems which often break off owing to weakening of the plant at the point of attack. On an old brick wall near the cars a specimen of *Eudorea angustea* Steph. was noticed at rest. Then another was spotted nearby and a short search yielded about twenty specimens in all. They were very fresh and had evidently recently emerged. From here we travelled eastwards to Nagden and found a few larvae of *Acleris boscana* F. on elm on the way. We seemed to be rather too late for this species as most of the feeding places were unoccupied. The larvae live in a characteristic hollow chamber formed by spinning two elm leaves together, one on top of the other, and their feeding places can be found by looking for the discoloured patches caused by the larva eating the inside layer of their retreat. On reaching the salterns we soon started searching for the larvae of *Eucosma heringiana* Jackh. which feeds on *Aster tripolium*. The larvae spin together the terminal shoots or flower buds and appear to eat the pith of the stem rather than the leaves or flowers. Colonel Emmet had been successful in rearing two moths earlier, but those I had taken had failed to emerge and I was hoping for better luck this time. To judge by the number of empty feeding places an earlier visit would have been more profitable. Larvae of *Eucosma maritima* Westw. were next found, feeding in webs on the flowering stems of *Artemisia maritima*. These were all sizes but mostly rather small. Larval cases of *Coleophora artemisiella* Scott were also

found on the same plant. At about 4 p.m., Mr. Fairclough left us to return home, while Colonel Emmet and I journeyed on for an evening trip via Ashford and Ham Street to Appledore. We were hoping to find the local *Gortyna hucherardi* Mab. here, but although the weather appeared to be perfect and the foodplant (*Althae officinalis*) was there in plenty, not a single specimen was seen at a spot where I had taken one moth some years previously. We waited until 11 p.m. before giving up and had to be content with one freshly-emerged *Larentia clavaria* Haw. (Mallow Carpet) and a pair of *Nonagria sparganii* Esp. taken *in cop.* on a reed stem.

September 19.—After spending the night with us at Camberwell, Colonel Emmet was kind enough to take my wife and me (also our dog) for a trip round some of my favourite Surrey haunts. The weather was bright and sunny, and we started off with a visit to Riddlesdown. Some time was spent here searching for the larval cases of *Coleophora potentillae* Staint. on *Poterium sanguisorba.* A fair number were found, together with larvae of *Nepticula poterii* Staint. which mines the leaves of the same plant. Larvae of *Cataplectica profugella* Staint. were also taken here by gathering a bag of the seeds of *Pimpinella saxifraga.* The larvae feed inside the seeds and it is advisable to collect only the most developed seeds. Occasionally one finds two of the tiny seeds spun together by a larva, but as a rule there is no visible evidence of its presence. From here we went to Mickleham where a search was made for the larvae of two species of Nepticulid which feed in mines in leaves of sycamore. A number of mines were found but the majority were empty and only about six were found to contain larvae. These sycamore species are of special interest as they have been found to be resident in Britain only in recent years.

October 26.—Browndown, Gosport, Hants, was visited on this date. Meeting J. M. Chalmers-Hunt at Croydon in the morning we motored to West Tisted, near Alton, Hants, where we met E. Sadler and had the pleasure of looking at some of his fine collection of lepidoptera. We were later met by P. J. Rogers and we set off for Gosport. In spite of a very heavy downpour of rain which coincided with our arrival, we made our way to the reed-bed where we expected to find larvae of *Cosmopteryx lienigiella* Zell. Mr Sadler had discovered this beautiful fenland micro to be well established at this unsuspected Hants locality the previous year, and he and I had bred a good series of the moth during June from larvae taken the previous autumn. The larva feeds in a mine in the leaves of *Phragmites communis* (reed). Unfortunately the larvae were not so common as in the previous year and only four were found by Mr. Chalmers-Hunt. It was fortunate we had waders and mackintoshes, as the reeds were still wet although the rain held off during our search. Two *Acleris lorquiniana* Dup. were disturbed and safely boxed during our search. This is another local fenland species, the foodplant of which is *Lythrum salicaria* (Purple Loosestrife).

October 30.—I was joined by Colonel Emmet and Mr. Uffen for a trip to Benfleet, Essex, on this date. Our main object was to find the larvae of *Tischeria angusticolella* Dup., which occurs on the higher ground overlooking Canvey Island. The larva feeds in a mine in the leaves of wild rose and we failed to rear any from larvae collected a month earlier the previous year. Once again the larvae were plentiful, as were also three species of Nepticulid which were possibly even more common. Yet

another common species on the wild rose was *Coleophora gryphipennela* Bouch. Larval cases of *Coleophora albicornuella* Bradley were found on leaves of bramble and *Agrimonia eupatoria.* After lunch we decided to visit the salterns near Canewdon, by the River Crouch, a few miles to the north of Benfleet. Here we collected seedheads of *Aster tripolium* for the larvae of *Coleophora asteris* Muhl. Larvae of *Scrobipalpa obsoletella* F. R. were also found in stems of *Atriplex littoralis* before it was time to return home.

26 Finsen Road, Camberwell, London, S.E.5. January 1967.

Notes on Rearing *Thalera fimbrialis* Scop. (Lep. Geometridae)

By S. Wakely

In July 1965 I netted a female *Thalera fimbrialis* Scop. at Dungeness, Kent, and obtained ova. Knowing from Mr. G. Haggett's article in the *Entomologist's Gazette* (1954, pp. 95-102) that the species is difficult to rear, I distributed most of the eggs among friends. Mr. E. Sadler notified me later that he had succeeded in breeding 4 specimens and I think he is to be congratulated as, although some friends succeeded in getting them through the winter, all their larvae later succumbed. For myself, I did manage to breed one moth, which emerged on the 17th July 1966. These notes are chiefly about the variety of foodplants offered and the success which followed as far as feeding was concerned. I was amazed to read in P. B. M. Allan's "Larval Foodplants" that on the Continent this species feeds on birch, blackthorn and hawthorn as well as low plants. On hatching I gave my larvae plenty of choice, including plants from the garden not mentioned by authors. It was soon evident that they preferred garden mint to any other pabulum offered, but it was noticed that they ate only the tiny leaves on the flowering stems as well as the flower petals. On offering the larvae *Solidago* they accepted this at once, but again only the leaflets among the flowers and flower petals were eaten as far as I could see. For two months the larvae had enormous appetites and I had great hopes of being successful in rearing most of them. Knowing that in September they would want to hibernate I prepared a plastic container by placing several stems of rush (*Juncus articulatus*) in it. I had a supply of this rush owing to having bred a series of one of the Coleophorids earlier. This gave the larvae plenty of choice regarding thickness of stem on which to take up positions for hibernation, a point that seemed to me to be rather important. By the end of September all the larvae had taken up positions on the rush stems and turned brown in colour. A few of the larvae had died but about 20 were alive when hibernation started. I now placed a piece of nylon netting over the container and the larvae were kept in a spare room and sprayed with water occasionally. Several larvae died during the winter, and in April a few green shoots of fresh mint were offered, also yarrow. Very soon it could be seen by the fresh frass that feeding had commenced, but now the mint was ignored and only the yarrow accepted. The feeding larvae were now very fussy and often went for days without feeding. The mortality rate had been increasing and soon there were only eight left. Birch, hawthorn, yarrow and *Genista tinctoria* were offered, all of which the larvae accepted at

times, but never with the appetites they had shown in the previous autumn before hibernation. By June I still had four feeding, almost full fed, but occasionally a larva would be seen to remain in the same position for several days and when touched was found to be dead and quite hard to the touch. The last survivor pupated while I was on holiday in Suffolk in June and the moth emerged on the 17th July, as already stated. Although the larvae feed on yarrow and have actually been found on this plant at Dungeness, it is felt that it has other foodplants at Dungeness. The fact that my larvae took to mint so readily made me think of *Teucrium scorodonia* (Wood-sage), which is such a common plant at Dungeness (but the larvae did not accept it.

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Butterflies in Greece, May, 1966

By H. W. Mackworth-Praed

The following account of twelve days in Greece in early May 1966, mainly at Delphi, does not add greatly to previous records such as that of Baron Charles de Worm's visit in April 1963 (*Ent. Rec.*, Vol. 75, pp. 233-8), but as the season was somewhat early, the spring species were only to be found at higher levels, and summer species had begun to emerge.

The party, consisting of my father, Col. C. W. Mackworth-Praed, my mother, my wife and I, and our eldest daughter, assembled at Athens airport in heavy rain on the evening of 1st May, which was discouraging after having left England in fine hot weather; and we drove to our hotel through streets awash. Next day, however, it slowly cleared, and we saw *I. podalirius* L. and several *E. ausonia* Hb. flying on the slopes as we made our way to the Acropolis. This we followed by a visit to the Pnyx on the opposite hill, and on walking round to a spot sheltered from the wind, we found in addition *L. boeticus* L. and *T. actaeon* Rott. flying over long grass in the sun which was then emerging. Near the summit were a few *V. atalanta* L., *V. cardui* L. and *P. egea* Cramer, and we watched a party of bee-eaters, *Merops apiaster*, flying round the seaward slopes beyond the Pnyx.

On the 3rd May, in fine weather which continued for most of our stay in Greece, we collected our hired Peugeot car, and set off for Delphi. While driving in Athens had its anxious moments, the country roads were not very crowded and the main hazard was coaches. We stopped first near Eleusis, where a few butterflies near the roadside included *G. alexis* Poda (*cyllarus* Rott.), *R. alchymillae* Hb., and worn specimens of *G. farinosa* Zell. and *Callophrys rubi* L. A stop for a picnic lunch beyond Levadia added *L. thersites* Chpn., flying along the edge of a cornfield to which wild gladioli added colour. Abundant here was a small Pyralid with pectinated antennae, *Synaphe moldavica*. A final stop in the late afternoon about 15 km. short of Delphi was made on the summit of a low pass (900 m.), a locality which we visited again later on. This pass, above the village of Arachova, was conveniently equipped with a large parking space, a refreshing fountain (and a shrine if needed) and the choice of walking down the ridge where a mass of wildflowers edged the vineyards, or up to higher ground towards cliffs from which a flock of Alpine Choughs flew piping out. Red-rumped swallows circled, while ravens

and hoodie crows passed at intervals. The many Pierids included *A. crataegi* L., which we were not to find present at Delphi, and *A. gruneri* H.S. Two species of coppers were noted, *L. phlaeas* L. and *H. tityrus* Poda (*dorilis* Hufn.), the latter also not being seen later at Delphi, while of the fritillaries we took *M. cinxia* L. and *H. phoebe* Schiff. Of the swallow-tails, *I. podalirius* L. and *P. machaon* L. sailed along the edge of the vineyards, but we did not here see *P. alexanor* Esp. which we were to find common at Delphi. However, on this and a later occasion, I saw a swallow-tail with an apparently more direct and less wavering flight, which I was unable to identify, and which seemed to inhabit the higher ground. This however was covered in prickly scrub, which tore my net in one pursuit, so then although I netted the quarry, it escaped before I could secure it, or identify it other than as a swallow-tail, of the general appearance of *P. machaon* but considerably darker.

We then went on to Delphi, where we stayed from 3rd until 9th May at the Hotel Vouzas. This hotel is built down a cliff, so that the reception rooms are at street level on the top floor. Our bedrooms, in the floor below, looked out over the valley, where far beneath we could see a dry river bed, with olive groves on each side. The opposite hillside was inviting, but to reach it would involve a considerable detour, and we never got there. To the South-west the valley opened to reach the Gulf of Corinth, with the small port of Itea, and the hills of the Peloponnese were visible beyond. At dawn a chorus of bird song came up from the valley, and occasional scavenging vultures or crows flew past level with our windows.

Walking down next morning to visit the temples, we found a swallow-tail, *I. podalirius* L., drinking from a fountain outside the hotel, and looking over the wall beside the road, we saw a number of female orange-tips, *A. gruneri* H.S., quartering the little fields on top of the cliff. Joining one of the numerous parties inspecting the ruins, we passed several fritillaries, *Melitaea trivia* Schiff., basking on the flowers between the fallen columns, while Commas, *P. egea* Cramer, flew round and settled on the pillars that remained. White admirals, *L. anonyma* Lewin, were drinking from the cistern below the Castalian spring.

Having made our visit to the ruins, we sought a less frequented place for collecting, trying first the path running under the cliff. It was apparent that we were too late for the spring flowers, no orchids were visible, and the chief colours were provided by the poppies, of a deeper red than our own, and large yellow clumps of Jerusalem sage, *Phlomis fruticosa* L., neither of which seemed to offer attraction to butterflies present. Disturbing a tortoise and a pair of rock nut-hatches, *Sitta neumayer* we went to stand in a funnel at the foot of the gully below the griffonry, and awaited events. A variety of species made their appearance in due course, but usually singly, and there was by no means a profusion of insects. The spring pierids were mostly over; only *Euchloe ausonia* Hb. was common. Swallow-tails were *alexanor* and *podalirius*, with *machaon* less frequent. Fritillaries were many, particularly when we climbed up to the ridge above the stadium, where greater freedom of movement was possible, but they were entirely of two species, *Melitaea trivia* Schiff., rather worn by now, and *M. phoebe* Schiff., except for some occasional *M. cinxia* L. in good condition. Lycaenids were not common, and the few skippers were nearly all *Spialia orbifer* Hb.

This area, and that adjoining the temples below the road, were our main collecting grounds during our stay. On one morning (6th May) we ascended the zigzag track leading from the ridge above the stadium leading up to the plateau high above the town. This rather interminable climb brought us to a very different type of country, of a more garrigue character, where spring insects were still abundant. Unfortunately we were not adequately provisioned for an extended stay, and after reaching the very welcome fountain about half-hour beyond the edge of the plateau, we had to retrace our steps. It would probably have been more profitable to go on to the further slopes beyond the fountain, but as it was we took on this plateau several species we did not see elsewhere. The same insects as at the town level were present up to the top of the zigzag path, though some of these were in better condition here than lower down, but as soon as the plateau was reached, there was considerable change. Here males of the attractive little orange-tip, *A. gruneri*, were the most conspicuous insects, with occasional *Zerynthia polyxena* Schiff., by now rather worn. The Queen of Spain fritillary, *I. lathonia* L., was frequent on the path, and several kinds of blues were noted, particularly *Philotes vicrama* Moore.

As usual in mountainous country, the choice of collecting grounds at a greater distance was somewhat limited by the difficulties of finding a suitable place to leave the car, and at that season all tracks leading off the main road were in constant use for bringing in the hay. Two visits to the shore of the Gulf of Corinth were not entomologically rewarding, mainly owing to the strong wind. Also the construction of a coastal road westwards from Itea, which will no doubt be extremely attractive in a few years time, had reached the stage of maximum earth-moving and dust. A more fruitful area was the valley floor below Delphi, which we reached on 8th May from Hrissos, the first village down the road. Leaving the car at a point where the road, having been through the upper part of the village, emerged to turn back into the lower, we walked down a long path between the olive groves, to a point almost directly under our hotel. The valley was not as dry as appeared from above, and there was still plenty of water in the irrigation channels. Here we found many dark hairstreaks, *Strymon acaciae* Esp. being plentiful, and *Strymon ilicis* Esp. occasional. Pierids were in greater abundance, with a fresh brood of *P. rapae* L., and skippers included *Reverdinus alchymillae* Hb. and *Adopoea flava* Brunnich. All three swallowtails were frequent, and the first *M. jurtina* L. was seen.

Though we tried other areas in the Delphi neighbourhood, they did not yield anything different, and the more accessible ground immediately west of the town was particularly disappointing, though perhaps this is as well since the town seems to be expanding onto it. On 7th May, we drove through Arachova, and after a stop at the pass, went on to visit the monastery at Osios Loukas. The butterflies in this area were the usual summer species of meadowland, Black-veined whites, Clouded Yellow, Small Coppers, Common Blue, with nothing of greater interest observed.

Mention must be made of some of the other fauna encountered at Delphi. The tortoises were fairly large, too big to pick up easily with one hand, and were infested with ticks on their underside where the legs came out of the shell. The highest one we found was half-way up the zigzag path to the plateau. All appeared to be the Marginated Tortoise,

Testudo marginata Schoepff. We saw several snakes, which whipped into the scrub before we could identify them, but they did not look unlike grass snakes, and we also on one occasion saw a much larger dark snake on the roadside. Lizards were as frequent as usual, and even more later at Mt. Parnes. Birds at Delphi included two species of vultures, the Griffon (*Gyps fulvus*) and less frequently the Egyptian (*Neophron percnopterus*). Both frequented the rubbish tip on the road to the west, and the former soared continuously over the temples, where the guides indicated them to the visitors as eagles. Lesser kestrels (*Falco naumanni*) were the only hawks seen, and we found a colony of them nesting in a quarry along the coastal road being made west of Itea. Ravens and hooded crows were continuously flying about the valley. Attractive small birds were the black and white Wheatears, which perched on the largest boulders of the hillsides, whence they flew up at passing insects. They were such a feature of the landscape that no doubt the Greeks had a word for them, though it does not seem to have been Oenanthe, for which Liddell and Scott suggest larger fowl.

The lighted shop windows along the streets of the town provided a variety of moths in the evenings, but no hawk moths.

Among them we found *Arctia hebe, Leucania vitellina, Plusia illustris* and *P. circumflexa, Gnopharmia stercoraria, Protorhoe unicata, Sterrha filicata* and three or four other species of *Sterrha, Eupithecia venosata, Stenia bruquieralis* and *Loxostoge palealis*. Day-flying moths at Delphi included a brilliant form of *Heliodes dipsacea* with forewings as purple as the best form of *P. viridaria*, also *Tarache lucida*.

Heavy rain marked our last evening at Delphi on 8th May, but it cleared next morning and we left under a rainbow. It remained windy however, and we saw few insects on our drive through Levadia and Thebes to the autoroute. We deviated towards Chalchis and lunched in attractive maquis country, with several sorts of cistus in flower, and a fine view looking over the gulf towards Euboea. Returning to the autoroute, we continued to our next stop at a hotel on Mt. Parnes, to the north of Athens, which rises steeply from the plain to 1400 m., and up which a good road runs in continuous hairpins. We were the only visitors in our large hotel, which appeared from its indifference to guests to be a nationalised undertaking. Nor was the locality of much interest, as although the combination of rocky woodland and wide grass glades appeared satisfactory, there was evidence of overuse in summer by campers, and the lepidoptera were very much as might be found in any comparable scene in any part of Europe, and much less than some.

E. ausonia, M. cinxia, V. cardui, V. atalanta, P. megaera, C. pamphilus, L. phlaeas were noted as well as the skipper *S. orbifer* which was in rather fresher condition than at Delphi. A fine *bellis* form was however taken of the Mazarine Blue, *C. semiargus* Rott. Under the trees two or three species of orchids were still in flower, and we saw a pair of butcher birds, *Lanius collurio* nesting, but access to much of the upper part of the hill was prohibited by notices of which—although the precise interpretation eluded us—appeared to be of the usual forbidding character of defence establishments.

Having inspected our surroundings, and finding no petrol or provisions obtainable locally, we decided to drive down and make a tour towards Marathon. We bought sufficient for our lunch at a village called Barnabas, and ate it a little further on at a pleasant stream beside a

copse. *P. egea* frequented the bridge, and *P. aegeria* the copse, while from a clump of grass in a neighbouring field started a tortoise which cantered slowly for better cover. This again, like the ones at Delphi, was *T. marginata* and equally infested with ticks. Skippers and Blues were plentiful here, the former both *R. alchymillae* Hb. and *S. orbifer* Hb., and the latter *G. alexis Poda* and *P. icarus* Rott. It was rather a pleasant spot, and the lady who had spread out her multicoloured carpets on the rocks after washing them in the stream was too polite to intrude. We drove on to Marathon and the mound over the Persian dead, where it was again very windy, and back to Mt. Parnes on a well-made road through Dionysos.

A further walk round Mt. Parnes next morning confirmed our disappointment with the place, and as it would anyway have been impossible to have reached the airfield from it the following day in time to catch our plane, we packed and transferred to a pleasant hotel near the airfield in Kalamaki, a coastal suburb of Athens, and next to a large Allied war cemetery. We left our luggage and drove along the coastal road towards Sunium. We stopped for lunch when we were clear of the suburbs, but the conglomerate rocks of the coastline and the strong wind did not invite bathing. A few miles north of Sunium, however, we entered an area of limestone and, stopping to admire a view over to an island, with sailing boats in the intervening strait, we saw that two or three clumps of large thistles at the edge of the road were thickly covered in butterflies, clinging on to those still in flower, sometimes several to a head. We tried to photograph this remarkable scene, and then to catch some of the better specimens, but as the strong wind bore them rapidly out of sight once disturbed, this presented difficulty. Apart from a few Lulworth skippers, *T. actaeon*, they were all of two species only, *Satyrus bryce* Hb. (*cordula* F.) and the equally large Marbled White, *Agapetes larissa* Hb., though since the females of both were of contrasting colour (the female *larissa* being heavily stained brown on the underside of the hind wings in the manner which occurs in female *galathea*) they gave the illusion of a greater variety than was the case. We also searched the ditches and sheltered pockets on the hillsides, finding a few more, but the majority had been badly damaged by the elements. We tried to find more on apparently similar thistles on adjoining stretches of the road in more sheltered surroundings, but without success, and both species seemed localised to this one area, though the constant stream of coaches made halting impossible at some places we would have liked to try.

Sunium itself was even windier, and nothing was flying in the vicinity, as we joined the throng of visitors to the magnificent temple of Poseidon. We returned to our hotel, and early next day flew back, passing over the Peloponnese on which we looked down at the large tracts of country remote from the few roads, which may still be entomologically unexplored.

The list which follows gives brief details of the localities of the 46 species of which we took specimens, or otherwise identified. Six of the species noted by Baron de Worms at Delphi were not seen by us; possibly they were over by the time of our visit. This was my first visit to Greece, though I hope not my last, and I had been expecting a much greater distribution of suitable collecting areas, and a greater number of unfamiliar species, particularly in the Satyrids. However, we were the whole time on ground either intensively farmed or else heavily grazed

by goats, of which we often passed herds of several hundred, and it is no doubt only in the vicinity of preserved ruins or places remote from the villages that sufficient plant-life remains to provide sustenance for lepidoptera.

Reverdinus alchymillae Hb. (*altheae* Hb.)	Occasional. Seen at Eleusis, Delphi, Marathon; usually singly.
Spialia orbifer Hb.	Fairly common throughout, Delphi, Marathon, Parnes.
Adopoea flava Brunnich (*thaumas* Hufn.)	One only, seen in the valley below Delphi, 8th May.
Thymelicus actaeon Rott.	Seen only at Athens, 2nd May, and Sunium, 11th May.
Papilio machaon L.	Not infrequent at Delphi, mainly below the town, and eastwards to the pass beyond Arachova, about 15 km. from Delphi.
Pterourus alexanor Esp.	Fairly common at Delphi at all levels from the valley floor to just below the plateau, and more frequent than *machaon*. Not seen elsewhere, and not at Arachova.
Iphiclides podalirius L.	Fairly common. Noted at Athens and throughout Delphi district.
Zerynthia polyxena Schiff.	A few flying on the plateau above Delphi, 6th May. Not seen elsewhere.
Anthocaris gruneri H.S.	The only orange-tip still flying at Delphi, the females common in the fields between the town and the ruins, but no males were seen below the level of the upper plateau, where they were common, 6th May.
Euchloe ausonia Hb.	The commonest pierid at Delphi, but not seen high up. Frequent throughout the area visited.
Pieris brassicae L.	Not infrequent at Delphi; specimens taken were much larger than some from the same locality, in April 1965.
Pieris rapae L.	Common at Delphi, worn at town level, with a fresh brood emerging in the lower valley.
Pieris ergane G.-H.	Three taken at Delphi, near the town. We did not take either *manni* or *krueperi*, though we were looking out for them.
Aporia crataegi L.	Not at Delphi, but common at the pass above Arachova, and east of this near Osios Loukas monastery.
Colias crocea Fourc.	Fairly frequent around Delphi, and also seen along roadsides when driving in Attica. One unidentified pale *Colias* sp. seen at Parnes, 10th May.
Gonepteryx rhamni L.	One worn male at Delphi, 6th May.
Gonepteryx farinosa Zell.	One worn male near Eleusis, 3rd May, and a few ditto at Delphi, 6th May.

Limenitis anonyma Lewin (*rivularis* auct.).	Numerous around the Castalian spring at Delphi.
Melitaea trivia Schiff.	The commonest fritillary at Delphi, from below the plateau down to sea level at Itea.
Melitaea cinxia L.	In good condition at Delphi, mainly on higher ground. The only fritillary at Mt. Parnes, but worn.
Melitaea phoebe Schiff.	Fairly common at Delphi, particularly around the ruins.
Issoria lathonia L.	Only seen on the plateau above Delphi, where it was frequent.
Vanessa cardui L.	Not infrequent throughout, especially along the road from Delphi down towards Itea.
Vanessa atalanta L.	Occasional throughout.
Polygonia egea Cramer.	Occasional throughout, and common on and about the ruins at Delphi.
Agapetes larissa Hb.	Only seen near Sunium, 11th May, where it was in quantity on thistle heads in a localised area of limestone.
Pararge aegeria L.	Noted at Delphi, 5th May, and more commonly in small woods near Marathon, 10th May.
Pararge megera L.	Frequent at Delphi, also at Parnes.
Satyrus bryce Hb. (*cordula* F.)	As for *A. larissa* above, near Sunium.
Maniola jurtina L.	Just emerging, seen at Delphi in the valley olive groves, 8th May, and at Marathon, 10th May.
Coenonympha pamphilus L.	Common everywhere.
Strymon ilicis Esp.	One only taken in the olive groves on the valley floor at Delphi, 8th May, with *acaciae*.
Strymon acaciae Esp.	Common in olive groves below Delphi, 7th-8th May.
Callophrys rubi L.	Worn specimens noted at Eleusis, 3rd May, and Delphi, 6th May.
Heodes tityrus Poda (*dorilis* Hufn.)	Pass above Arachora, 3rd May. Not seen elsewhere.
Lycaena phlaeas L.	A few seen in Delphi district, also at Mt. Parnes.
Lampides boeticus L.	Athens, 2nd May, below the Pnyx. Worn.
Cupido minimus Fuesslin.	Taken at Eleusis, 3rd May, Delphi, 6th and 7th May, but only singly.
Cupido sebrus Hb. (*osiris* Meigen.)	Two taken at Delphi, 6th and 7th May.
Philotes vicrama Moore	Fairly widespread at Delphi and at the pass above Arachova.

Glaucopsyche alexis Poda (*cyllarus* Rott.)	Not seen at Delphi, but widespread in Attica (Eleusis, 3rd May, Levadia, 3rd May, Marathon, 10th May).
Aricia agestis Schiff.	Frequent at Delphi.
Cyaniris semiargus Rott.	Delphi, high ground, and Parnes. Specimens from Parnes included a fine *bellis* Frr. Several from Delphi approaching this form.
Polyommatus icarus Rott.	Common throughout.
Lysandra thersites Chpn.	Two seen on 3rd May, at Levadia and near Delphi; both worn.
Lysandra bellargus Rott.	Only one seen, on the plateau above Delphi, 6th May.

A Note on the Genetics of *Abraxas grossulariata* ab. *fulvapicata* Raynor

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Abraxas grossulariata ab. *fulvapicata* Raynor (1903) differs from the typical form in the suppression of the elongate costal member of the row of black spots along the distal border of the yellow fascia of the forewing; the loss of this spot permits the yellow to spread towards the apex of the wing. The aberration was recorded by Raynor from Lancashire and from London, and was probably introduced into his breeding stock from the former county. From Raynor's stock it was doubtless transferred to those used in the extensive genetical experiments of Onslow, who gives a good figure of *fulvapicata* (Onslow 1919, Pl. IX, fig. 21), without adding any information about its occurrence or inheritance. Not being a very striking form it has been seldom recorded. Porritt (1921) did not list it as occurring in the Huddersfield district of Yorkshire; though he recorded most of the other then known recurrent aberrations, he may have regarded *fulvapicata* as too unimportant to notice. It is perhaps significant as negative evidence as to its distribution, that *fulvapicata* is not recorded by Lempke (1951, pp. 261-70) in his thorough and scientific review of the aberrations of *A. grossulariata* known in Holland, nor does he mention it in his summary of the genetic information available for the species. In view of the possibility that the oberrations of *A. grossulariata* can still add something to evolutionary theory (Hutchinson 1966), and unrecorded genetical information about these aberrations has a certain potential interest.

Some, but not all, of the families of *A. grossulariata* bred by Onslow in his genetical experiments are preserved in the Museum of Zoology of Cambridge University. In this material there are specimens of *fulvapicata* from three families. One family is represented only by a single ♂ (21 Ea♂ 5) in a drawer containing specimens selected to show the range of variation in the species. The other specimens occur in two families 22D and 22L, unfortunately without any indication of parentage. In family 22D, which was presumably obtained by crossing two individuals

heterozygous for the recessive *varleyata* gene, there are eighteen specimens. Of these three are *varleyata*, in which *fulvapicata* would probably be hypostatic and unrecognisable; of the other fifteen, six (3♂♂, 3♀♀) are *fulvapicata*. In family 22L there are thirteen specimens, of which two, both males, are *fulvapicata*. Segregation appears to be reasonably clean, and presumably a single gene, which is not sex-linked, is involved. If that gene were dominant, the smallest expected number of *fulvapicata* in the twenty-eight non-*varleyata* individuals of the two broods would be fourteen, resulting from matings of heterozygotes with homozygous *grossulariata* to produce both families; the largest expected number would be twenty-one, resulting from pairing heterozygotes. If the gene were recessive, the expected numbers could vary between seven if all parents were heterozygous, and fourteen if in each family a heterozygote were paired with a homozygous *fulvapicata*. The actual proportion of eight in twenty-eight accords far better with the second than with the first hypothesis. In spite of the smallness of the numbers involved, it is reasonable to conclude that *fulvipicata* is due to a single autosomal recessive gene.

I am most grateful to Dr. John Smart for the opportunity to study the specimens in his care.

REFERENCES

Hutchison, G. E., 1966. The sensory aspects of taxonomy, pleiotropism and the kinds of manifest evolution. *Am. Nat.*, **100** : 533-540.

Lempke, B. J., 1951. Catalogus der Nederlandse Macrolepidoptera, X. *Tijdschr. Ent.*, **94** : 227-230

Onslow, Hans H., 1919. The inheritance of wing colour in Lepidoptera, I. *Abraxas grossulariata* var. *lutea* (Cockerell). *J. Genet.*, **8** : 209-258.

Porritt, G. T. The Huddersfield varieties of *Abraxas grossulariata*, with description of a new variety. *Entom. mon. Mag.*, **57** : 128-135.

Raynor, G. H., 1903. Notes on *Abraxas grossulariata* and how to rear it (concluded). *Ent. Rec.*, **15** : 8-11.

Cranleigh Butterflies 1966

By Major A. E. Collier

In a season which showed no promise of improvement in the status of any of the indigenous species, it was a real pleasure to welcome a great immigration of *Vanessa cardui* L. Fine large and perfect specimens were to be met with in every rough meadow and clearing in May and June, and it was only a very unkind summer which put paid to the prospect of even greater numbers in late summer.

The last great invasion was in 1952, but in that year the imagines seen locally were all remarkably small.

During these two months, spent largely in new plantations and clearings, I was horrified to find a brushwood killer being applied, sometimes ruthlessly, to growing vegetation in between the young conifers. In one large local plantation the job had been done with care and discrimination, and the killer had been applied only to the stumps of Hazel, Chestnut, etc., leaving the brambles and flowering plants untouched. In another batch of plantations, in all about 1,000 acres, the fluid had been sprayed over most of the undergrowth, and the area was a scene of brown desolation with neither birds nor insects, but with a very unpleasant smell.

I found the Pieridae not over plentiful, and it is now many years since

P. brassicae L. has been a nuisance in the local vegetable gardens, although *P. rapae* L. is troublesome in a small way. *P. napi* L. was however rather more noticeable than of late and *Euchloe cardamines* L. promised well at the end of April, but failed to increase in numbers and was rarely seen after the first cold weeks of May.

Leptidea sinapis L. was less frequently seen this year; *Gonepteryx rhamni* L. was not its usual buoyant self, and *Colias croceus* Fourcroy was met with once only on 26th May in the form of a female ab. *alba*. I trust that it succeeded in finding a field of lucerne, which, if grown at all nowadays, is cut in an early stage for silage.

The Hesperiidae call for little comment, but they did appear to be subdued in numbers, and little variation was seen in *Erynnis tages* L. and *Syrichtus malvae* L.

The Nymphalidae have again been very disappointing. *Clossiana euphrosyne* L. and *Argynnis selene* L. are making little if any headway in areas which might have been specially prepared for them, resembling, as they do, the fabulous fritillary areas of the forties. Where spraying has been done indiscriminately the colonies will in all probability disappear.

Euphydryas aurinia Rott. is on the verge of extinction locally, for no apparent reason, and *Argynnis paphia* L. is only just holding its own after showing greater promise in 1965. *Vanessa atalanta* L., hardly seen in the early summer, became fairly plentiful very locally in September. *Aglais urticae* L. and *Polygonia c. album* L. were rare throughout the season.

Limenitis camilla L. became quite plentiful in 1965, and has continued to flourish in 1966 in most, but not all, of its localities. *Vanessa io* L. appeared only as worn specimens after hibernation and there was little evidence of *Apatura iris* L., although one larva, still in its first instar on 18th August, was found after very extensive searching in a still forested area where ten years ago it was not difficult to count at least twenty larvae.

The Lycaenidae gave a very mixed showing. Returning from a visit to Hod Hill, where on two successive days in very hot weather I saw only two *Lysandra bellargus* Rott., I was surprised, and delighted, to see several hundred flying on the North Downs on 8th June. Two days later, in equally hot weather, but with a threat of thunder, I put up a dozen with difficulty.

I recollect the same thing happening in 1953. On 26/5/53 I found very big numbers flying on the same down and reported this to the late Castle Russell. He visited the down on the next day and saw very few, and was naturally rather indignant. On 5th June I went again to the down, and found a very good number on the wing, so that it appears to be unwise to judge a *bellargus* population unless frequent visits are made.

Lysandra coridon Poda had a good year again, being quite plentiful on 29th July and in substantial numbers on 16th August, the females being particularly numerous, active and productive. Altogether *coridon* were on the wing from 22nd July to 9th September, when there were still some fresh males and females to be seen. *L. bellargus*, after their good display in June, failed almost entirely to produce a second brood. *Polyommatus icarus* Rott. were few and far between even under what might be considered optimum conditions of everything except climate. *Plebejus argus* L. is building up its strength, but the colony may take

some years to reach the state it was in when I first made its acquaintance with Castle Russell and Woollett, both of whom had taken nice aberrations there before the disastrous fires of the early fifties.

Lycaenopsis argiolus L. was not seen at all, and *Callophrys rubi* L. only in small numbers. *Thecla betulae* L. still remain quite plentiful judging by the comparative ease with which their eggs can be found in most suitable situations.

Lycaena phlaeas L. have almost disappeared from this neighbourhood and my diary recorded one on 5th August, and two more on the 31st. It is now seven years since the wonderful summer of 1959 when *phlaeas* flourished exceedingly, but 94 wet days between early July and October in 1960 practically exterminated the species locally, and there have been no signs of recovery. Fortunately the Satyridae are still with us, and at least some of them appear to be able to stand up to our execrable climate. *Coenonympha pamphilus* L., however, failed in its second brood for the fourth successive year, after showing great promise early in the summer. *Pararge megera* L. and *P. aegeria* L. were at about their usual strength. *Eumenis semele* L. was not seen at all on the north downs, and *Maniola tithonus* L. were slow to emerge during prolonged gloomy and cool weather in July. *Maniola jurtina* L. flew in thousands in the rough woodland fields from mid June until the first weeks in August, but they were noticeably thinner in numbers on the downs. *Aphantopus hyperantus* L. were, as usual, in great form in all their usual haunts and they alone of all the species showed wide and interesting variation from ab. *lanceolata* Shipp, through combinations of ocelli and white spots, down to ab. *caeca* Fuchs, which incidentally I find very rare in the female.

Altogether 1966 has not been a year to which one will look back with nostalgia, and the natural optimism of the lepidopterist cannot fail to be tempered by the prevailing and increasing use of the brushwood killer, plus the meteorologists predictions that for several decades at least we cannot expect a return to the warmer and more settled summers which we enjoyed for forty years prior to 1939.

Moths with Red Eyes

By B. J. Lempke

I have not made a special study of the eye colour of our moths, but a superficial glance at the series in collections shows that it varies according to the species from some tint of greenish through different shades of fuscous to quite black. Even in specimens of the same species the colour may vary considerably. I saw a Dutch series of *Orthosia gothica* L., which showed all transitions of pure greenish to a uniform fuscous. There were specimens in which the green was covered by small specks of fuscous, others had long stripes of that colour. They were followed by specimens in which the eyes were fuscous with small greenish specks and the series was closed by some, the eyes of which were completely fuscous. There is no relation whatever between the eye colour and the tint of the ground colour of the wings.

A very different phenomenon, however, and only observed in the Netherlands in the last decade, is the occurrence of specimens with decidedly red eyes. The first specimen which was taken with this remarkable colour was a *Nomophila noctuella* L. (Pyralidae). It was

caught on 15th September 1958. In 1962 two red-eyed moths were taken, one specimen of *Scotia exclamationis* L. and one of *Diarsia rubi* Vieweg (both Noctuidae). Number four was an *Archips podana* Scop. (Tortricidae), met with in 1963. The next year furnished again two specimens, one of *Amathes c. nigrum* L. (Noctuidae), the other of *Thera obeliscata* Hübner (Geometridae). Finally an *Apamea anceps* Denis & Schiff. (*sordida* Bkh.) (Noctuidae) was caught in 1965. This makes a total at present of seven specimens, a very low number when the great number of moths is taken into consideration which every year are observed in traps and on m.v. lamps.

A few points are very striking. First that the phenomenon is not restricted to one family. We now know representatives of four different families, so that it is not excluded that it may occur in all "Heterocera". The second point is that the insect is for the rest perfectly normal. Red-eyed specimens are well known in vertebrates, but then they are always albinos with all the disadvantages of it. But the red-eyed moths are for the rest quite normal. I may add that the colour, which may vary from a more orange red to pure red, is very striking, so that it could hardly have escaped attention of, for instance, the entomologists of the preceding generation who looked so accurately at their specimens. It seems that we have to do with a modern mutant, which spreads very slowly through the populations. That it should be restricted to the Netherlands, is hardly to be expected.

I therefore draw the attention of the British lepidopterists to this striking colour aberration. When they sort out the victims of their traps or are working with their m.v. lamps it will not cost much extra time to look at the eyes of the animals. If the specimen is a still living female keep it for eggs, for the form will almost certainly be a hereditary one and it will be highly interesting to know how it inherits. And what is the result of the deviation of the normal eye colour for the insect itself?

Amsterdam Z 2, Oude IJselstraat 12 III.

Notes on the Larval Habits of *Eriogaster lanestris* Linn. (Lep. Lasiocampidae)

By R. W. Watson, F.B.A.A., F.A., F.C.C.S., F. Comm. A., F.R.E.S.

I first became acquainted with *lanestris* when I resided in the Shaftesbury area of North Dorset for a few months in 1944. During March the fur-covered clusters of ova were a conspicuous sight on the blackthorn, bramble, and hawthorn, the female usually choosing a single twig often at the top of the hedge.

The larvae emerge during late April or early May according to the season and grow very slowly at first. In the early instars they have a rather shiny black worm-like appearance. Great industry is displayed in the weaving of the communal web. From my long experience of this species I have found that after spinning the second web they increase this in size and do not normally leave it to build another.

In the year in question, 1944, the species was very numerous, the webs being about the size of a large grapefruit and dense greyish white in appearance. After several weeks' use these webs become very un-

sanitary, being full of frass, cast skins and any larvae which have died.

At this stage in the development there is considerable disparity in the growth rate. It seems that after the change when the handsome coloured skin appears the healthy larvae grow more rapidly while some, even when not parasitized, seem to stand still and eventually die.

I have a large wild plum tree in the garden on which I have placed 3-4 webs of lanestris each year from 1963 to 1966. Although the tree is about 12′ high and 7′ in diameter, after a week or two most of the larvae finish up in one large web, usually on the sheltered west side.

When leaving the web to feed, the larvae spin silken threads over the branches, presumably in order to find their way home. These tracks become wide and dense near the web, diverging as they come to various branches, and continuing to the feeding site. At all times of the day larvae may be seen going to and fro, reminiscent of ants at work. Other larvae may be seen in the web, probably awaiting a moult; and at other times particularly when the first warmth of the morning sun is felt the larger larvae cluster on the outside of the web and a very pretty sight they make.

The Lackey (*Malacosoma neustria* L.) is also found quite commonly in the same area. In the years 1963, 1964, 1965 and 1966 I placed a web of *neustria* on the same tree. For some unaccountable reason most of the larvae disappeared and what is more strange the remainder made no attempt to repair or renew their own web, but became unpaying guests of *lanestris*. Often the larvae may be seen sunning themselves in apparent harmony on the web, actually touching *lanestris* as they arrange themselves in rows.

In 1965 *neustria* took up their lodgings on the 8th June and remained for approximately three weeks.

By 2nd July all larvae had dispersed, *lanestris* feeding singly for a few days prior to pupation. On dispersal they travel some considerable distance. I have found them within 100 yards of their home tree.

Birds do not seem partial to *lanestris*, except for one occasion when the web was torn open and all the larvae had disappeared. I believe a cuckoo was responsible.

Lanestris is not an easy larva to rear. While living in Dorset, and collecting the food from nearby hedges, frequented by *lanestris* I had no trouble. Here in the New Forest where I have not found *lanestris* in the wild it is not so easy, only about 30% success being achieved.

Each year it is a pleasant trip to find *lanestris*. The method is to drive slowly along the lanes, the eye soon becoming accustomed to the quest and as many webs as are required may be found in a few hours.

Porcorum, Sandy Down, Boldre, Lymington, Hants. January 1967.

The Nature Conservancy is planning to operate a Lepidoptera Distribution Maps Scheme this spring. At present the Macrolepidoptera only are envisaged with a list of 27 butterflies and about 470 moths. Those taking part will be requested to fill in cards supplied by the organiser giving the required details as to species, locality, habitat, etc., and these cards may be obtained by writing to Mr. J. HEATH, Biological Records Centre, Monks Wood Experimental Station, The Nature Conservancy, Abbots Ripton, Huntingdon.

I would suggest that those taking part should also keep notes of microlepidoptera species noted, which could be kept until such time as the scheme can be made complete by the inclusion of these genera.—Ed.

Austrotortrix postvittana Walk. in Hampshire

By E. Sadler

Whilst browsing through the collection of a friend, Lieut. S. Swift, R.N., of Alverstoke, near Gosport, a few years ago. I noted a micro unfamiliar to me. A few months ago he kindly allowed me to borrow it.

I in turn passed it on to Mr. S. Wakely, who informs me that it is a female *A. postvittana*. Lieut. Swift tells me that his specimen was taken at the window of a house he then occupied, in Alverstoke, on the evening of 21st Sepember 1962.

Mr. Wakely has sent me the following list of references as to the occurrence of this species in Britain:—

At a meeting of the South London Entomological and Natural History Society on the 13th August 1931, Mr. S. N. A. Jacobs exhibited a female specimen which he had bred from a larva found feeding on a New Zealand Newton pippin apple by Mr. T. R. Eagles.—(*Proc. S. Lond. ent. nat. Hist. Soc.*, **1932-33**: 70).

The first record of the species actually breeding in this country was in 1937, when Mr. Woodbridge bred four moths from larvae found feeding in spun shoots of *Euonymus japonica* on 17th June at Newquay, Cornwall. —Meyrick, E. 1937 (*Entomologist*, **70**: 256).

Twenty years later it was recorded from Redruth, Portreath, Falmouth and Camborne, Cornwall. Owing to an error the name Camborne was printed as Winborne.—Tremewan, W. G. 1957 (*Entomologist*, **90**: 76).

There is one record for Devon where it was recorded at Torquay. Bradley, J. D. and Martin, E. L. 1956 (*Ent. Gaz.*, **7**: 151).

The larvae are usually found on *E. japonica*, but they have also been found on red valerian (*Centranthus ruber*) privet and veronica. Larvae may also be reared on apple and hawthorn.—Higgins, H. C. 1958 (*Ent. Rec.*, **70**: 53).

Other Cornish localities are Gerrans, Portscatho and Porthtowan, and larvae are reported as feeding on lavender, fleabane (*Pulicaria dysenterica*), cultivated Hypericum, Chrysanthemum and Montbretia.—Mere, R. 1966 (*Ent. Gaz.*, **17**: 49-50).

St. Christopher, West Tisted, Alresford, Hants. i.1967.

Notes and Observations

An Early Butterfly.—I was pleased to see a male *Gonepteryx rhamni* L. (brimstone butterfly) in my garden at West Wickham to-day. This is at least a month earlier than usual, due, no doubt, to the exceptionally mild weather.—D. S. Burrows, 22 Lime Tree Walk, West Wickham, Kent. 5.ii.1967.

Early Captures in 1967.—In my mercury vapour trap on the morning of 31st January were a *Biston strataria* Hufn. and a *Nomophila noctuella* Schiff. The latter, on release, headed strongly northwards. Even taking into account the unusually mild weather, these arrivals seem worthy of notice. These appearances were followed on 2nd February by *Xylocampa areola* Esp. and another *Nomophila noctuella*, and on 3rd February by two more *Biston strataria* and one more *N. noctuella*.—L. W. Siggs, Sungate, Football Green, Minstead, Lyndhurst, Hants. 3.ii.1967.

FOODPLANTS OF ACHERONTIA ATROPOS L.—The recent not "Observations on the Family Sphingidae found around Cape Town" by D. G. Sevastopulo (1967, *Ent. Rec.*, **79**: 24) makes interesting reading and has prompted me to record further foodplants of *Acherontia atropos* L. as far as Malta is concerned. Beside the potato plant, I have found and bred the larva of this moth on the following plants:—*Lippia citriodora* (Verbenaceae), *Datura arborea* (Solanaceae), *Jasminium* spp. (Oleaceae), *Phlaseolus* spp. Leguminosae), and only last October, Mr. H. G. Allcard and myself found four larvae feeding on three different plants of *Teucrium fruticans* (Labiatae).—ANTHONY VALLETTA, F.R.E.S., 257 Msida Street, B'Kara, Malta. 6.ii.1967.

A Remarkable Sale of Exotic Butterflies

By C. G. M. DE WORMS, M.A., Ph.D., F.R.E.S.

On the 24th and 25th October 1966 there took place at the Hotel Drouot in Paris possibly the most outstanding sale of foreign lepidoptera of recent times. It comprised the vast collection of the more spectacular exotic butterflies formed by the late M. G. Rousseau Decelle, who was apparently the Secretary to the French Senate. The groups offered consisted of all the Papilios from every part of the globe, including some of the rarest of the Ornithoptera as well as a very fine selection of the Morphos and the Charaxes. In each family there was a large number of types, many of which were secured by the Musée de l'Histoire Naturelle in Paris. But it was the prices prevailing which far exceeded anything that has ever been realised in this country for foreign lepidoptera, though of late figures have been appreciating materially for the more spectacular species. Apparently among the hundred or so people present at the auction were a few wealthy American collectors who acquired a great many of the chief rarities.

The whole sale was divided into the various Families, totalling 426 lots with almost 700 sub-divisions. The number of individual insects offered was just over 5800. These realised a grand total of just short of 235,000 new francs, which at the current rate of exchange represents some £17,000, on a par with the value of rare postage stamps. This huge figure gives each insect an average of about 40 f. or almost £3 apiece. This is all the more remarkable since many of the species are regarded as extremely common in their native haunts, though of course quite a proportion were among the rarest and most difficult to obtain. Among these were many of the Ornithoptera which made by far the biggest prices. The 347 insects of this group on sale realised a total of 86,750 f., which is equivalent to nearly £6,300, an average of exactly 250 f. a specimen, just over £18. By far the most outstanding was the single *Troides allottei*, apparently the type male, which reached the phenomenal figure of 10,500 f. (£760). It would appear that the only other representatives of this species which occurs in the Solomon Islands are four specimens in the Natural History Museum in London. Yet another great rarity was a pair of *T. rothschildi* which went for 3000 f. (£215), while a female *T. tithonus* together with a pair of its f. *waiguensis* soared to 6200 f. (£450). A male of that grand tailed species, *T. paradisea* f. *auriflua* went up to 900 f. (£65), while two pairs of this insect realised 1100 f. (£80) a pair. A similar price was paid for a pair of the magnificent *Troides alexandrae*, the female of

which is the world's largest butterfly. A less good pair was sold for 900 f. (£65) and a single male for 950 f. (£68 10s.). There were no less than ten examples of the very rare *T. chimaera* with four types, all of which reached very high figures. A pair of the form *dracaena* went for 2900 f. (£210) with another pair, including the male type of this form, for 1600 f. (£116). Three females of this species were sold for 2000 f. (£145). No less than 4800 f. (£348) was paid to buy the male type of f. *draco*, with 2000 f. paid for the male holotype of *f. aurata* and the female holotype of *f. herminea*. Another most scarce species, *T. goliath*, was represented by five specimens of which two pairs of f. *supremus joiceyi* secured 1900 f. (£138) and 1100 f. (£80) respectively. A pair of the form *samson* coupled with a female of f. *atlas* rose to 2200 f. (£160). Among the more western species, two male *T. trojanus* fetched 750 f. (£54), while the well-known *T. brookiana* from Malaya and Borneo went to abnormally high prices. A male and two females of f. *trogon* also reached 750 f., and three males with a female of f. *albescens* made 500 f. (£36). A pair of the very rare *T. magellanus prattorum* rose to 3100 f. (£222) with a pair of *T. rideli* at 300 f. (£23). There was a large and very varied series of the many forms of *T. priamus*, often mixed with *T. victoriae regis*. Four males of this latter species realised 900 f. (£65). Of the *T. priamus* five types of which two were varieties of the form *hecuba*, one of f. *lydius* with a pair of f. *croesus*, fetched 1800 f. (£130). Thirteen lots each containing a single *T. victoriae regis* with three forms of *T. priamus*, all males, averaged 420 f. (£30) a lot or 100 f. an insect, equivalent to £7 10s., a very large figure for some of the commoner forms of the Ornithoptera. However, one of the least-known and rarest of the group is *T. procus* from the island of Ceram. A pair of this species with a male of *victoriae regis* made the big price of 2800 f. (£203). Of the more widespread species there was a large selection of *T. helena* of which 33 examples of various forms made 830 f. (£60), while 21 specimens of mixed forms of *T. amphrysus* with a pair of *T. miranda* went to 900 f. (£65). Two males of *T. plato* with a couple of its female forms f. *nychonia* and f. *chitonia*, a pair of *T. darsius* and four males with three females of *T. hypolitus*, all in one lot, were sold for 1300 f. (£94). In another lot three male forms and six females of *T. criton* with a pair of *T. hypolitus sulalensis* and five male and a female of *T. haliphron* realised 500 f. (£36).

The Morphos comprised a very wide assortment of most of the better-known species. The 660 insects offered averaged 54 f. (almost £4) each with a total of nearly 36,000 f. (£2600). Seven males and eight females of *M. hercules* fetched 210 f. (£15), while a large series of 53 males, but only 11 females of *M. telemachus* in its many forms made a total of 1610 f. (£117). Ten males and two females of *M. cisseis* were bought for 500 f. (£36). Eleven males and eight females of *M. helenor* reached 260 f. (£19), also five males and four females of *M. neoptolemus* went for 220 f. (16). A pair of *M. uraneis* with four males and a single female of *M. eugenia* sold for 480 f. (£34). Again five males and 13 females of *M. aega bisanthe* and of f. *mellinia* went to 550 f. (£40). This figure was also attained by two pairs and one male of *f. rosenbergi* of that superb species *M. rhetenor*, while seven male and three female of *M. didius* fetched 250 f. (£18). There was also a large number of type specimens. A male paratype of *M. telemachus martini* with a type pair of the subspecies *caius* went to 1200 f. (£86), while four paratype males of special forms

of *M. diana augustinae* reached the high price of 2700 f. (nearly £200). A still higher figure was attained by three gynandromorphous forms of *M. aega* which rose to 2800 f. (just over £200).

By far the largest portion of the sale was devoted to the Papilios of the world, divided into four geographical regions, from the Palaearctic area, Africa, the Americas and the Indo-Australian countries. These sections comprised just over 3300 insects which realised a total of 72,155 f. (£5225). In the Palaearctic section two pairs of *P. elwesi* with a male *P. maraho* made 310 f. (£22) and seven males with two females of various forms of *P. bianor* went to 130 f. (£9 10s.) A big selection of *P. machaon* races embracing 34 males and 17 females fetched 600 f. (£43), while seven male and three female paratypes of this widespread species went up to 680 f. (£49). In the African series three male and two female *P. antenor* from Madagascar made 200 f. (£14 10s.). Next were five males of that splendid blue species *P. zalmoxis* at 220 f. (£16), also three males of this insect with three males of the huge *P. antimachus* were sold for 250 f. (£18). However, two pairs of *P. rex* went to 550 f. (£40). A long series of 22 males and 27 females in their many forms of *P. dardanus* realised 750 f. (£55), while five males and a female of *P. hesperus* made 120 f. (£8 10s.). Four males and a single female of that grand orange species *P. nobilis* with eight males and a female of *P. mackinnoni* went for 350 f. (£24). No less than 1000 f. (£72) was given for two males and a female of the rare *P. grossesmithi*, coupled with three male *P. erithonioides* and two males of the common *P. demodacus*.

The very large section of American Papilios covered nearly all the recognised species, but it is possible only to mention the main highlights, since there were a big mélange in the 53 major lots offered. Two particular species stand out. These were *P. zagreus* of which seven males and a female fetched 1100 f. (£80). Just over this figure, 1150 f. (£83 10s) was paid for a pair of probably the largest of this group, *P. homerus*, found only in a remote part of Jamaica. A single male of this superb insect made 500 f. (£36). A couple of males of *P. enterpinus* went to 280 f. (£20). As before, there were a number of types which brought in big sums. The Indo-Australian section, which alone raised 36,000 f. (£2600), comprised a vast number of species. Of the rarities two male and a female *P. jordani* realised 1600 f. (£115). Among the commoner insects 16 males and 18 female *P. aegeus* in a big assortment of forms made 560 f. (£39). Six males and a similar number of female *P. bridgei* went for 400 f. (£29). Even a series of 15 males and a dozen females of *P. ulysses* in various forms soared to a total of 2270 f. (£164). Among the types one male and three females of special forms of *P. polytes* fetched 1300 f. (£95). A male *P. memnon agenor* and three female of f. *anceus*, all holotypes, went to 850 f. (£62), and a single female allotype of *P. ponceleti* for 1100 f. (£80).

There was a very large section covering the Charaxes with nearly all the species included, in particular those from Africa. The whole group of almost 1200 specimens made the high price of 27,400 f. (just on £2000). Among the choicer species a pair of *Ch. phoebus* from Abyssinia with two male *Ch. phraortes*, three male *Ch. druceanus* and a pair of *Ch. proximans* realised 800 f. (£58). A pair of the very rare *Ch. andronodorus* made 1300 f. (£95). Two pairs of *Ch. monteiri* together with three male *Ch. pythodorus* and a pair of *Ch. xiphares* went to 500 f. (£36). Four males of the rare *Ch. acraeoides* reached 520 f. (£37 10s.), while three pairs of

Ch. thomasius totalled 1200 f. (£87). The chief prize were two pairs of *Ch. cowani*, one of which made 1000 f. (£72) and the other 1050 f. (£75). Even most of the quite common species sold for an average £1 an insect. Among the types specimens three males and one female *Euxanthe trajanus antoninus* with a holotype male and allotype female of *Euxanthe crossleyi claudiae* made 1250 f. (£90).

There was a smaller section of American Nymphalines which included the more spectacular species of the Agrias and Catagrammas with a few of the Preponas. Twelve males of this last group comprising ten species including a single male of *Prep. praeneste confusa*, one of the rarest, fetched 400 f. (£29). Six males and four females of six species of the Agrias comprising a pair each of *A. sardanapolus, A. narcissus* and *A. phalcidon* were bought for 850 f. (£62). In another lot single pairs of *Agrias sahlkei, A. sardanapolus* with single males of *A. narcissus, A. amydon* and *Sideronia mars* went to 520 f. (£37 10s.), while 500 f. (£36) was paid for single males of *Prepona praeneste* and *P. rothschildi*, a very rich lot.

Among the few of the larger exotic moths was a pair of the huge South American noctuid *Thysania agrippina* which sold for 120 f. (£9) and single specimen each of *Charagia mirabilis* and the enormous swift moth *Leto venus* made as much as 850 f. Of the small number of Saturniid moths a male each of *Attacus erebus* and of *A. aurantiaca*, of the large Atlas moth group, realised 229 f. (£15 10s.). A pair of the latter species reached 190 f. (£13 15s.), while a pair of *Coscinoscera hercules* went for 320 f. (£23). The final part of the sale was made up of several lots comprising experimental aberrations of many well-known butterflies, particularly the Vanessids and Catocalas together with some Gynandromorphs and hybrids between the commoner Sphingidae. As much as 1000 f. (£72) was paid for halved gynandromorphs of *Parnassius discobolus, Appias nero, Argynnis paphia, Dendrolimus pini* and three somatic mosaics of *Lymantria dispar*, the Gipsy.

It may be a long time before there is another sale with so many spectacular and rare insects realising such phenomenal prices.

Obituary

REV. F. M. B. CARR, M.A.

Frederick Mark Bennoch Carr was born in London on 8th July 1878, and died at Boscombe on 13th January 1967. He was the son of F. B. Carr, who was President of the "South London" in 1930 and died during his term of office.

"Young" Carr joined the Society in 1899 and was appointed a Special Life Member in 1950. He was also for many years a leading member of the Lancashire and Cheshire Entomological Society and in recent years he had been a frequent contributor to the "Entomologist's Record".

In his early days, his home was at Lee, then included in the county of Kent, and he was educated at a private school in London. He was on the staff of the London Library for a time, before becoming a master at Salisbury Cathedral Choir School. Deciding to take Holy Orders, he went to Durham University with an Exhibition to Hatfield Hall. Here he played cricket, football and fives, and was captain of his college lawn tennis VI. In successive stages he took his B.A. (1905), L.Th. (1906) and M.A. (1908), and was ordained deacon (1906) and priest (1908). After being

curate in three parishes in the London area, he went up North to be Vicar of Alvanley, Cheshire (1917-28), and then of St. Michael's, Ditton, Lancs. (1938-47), when he retired and came to live in a house at Sandbanks overlooking Poole Harbour, before moving in 1952 to Mudeford. While living in the Bournemouth district, he helped with the services at Christchurch Priory and many other churches in the area and in 1957 he was in charge for nine months of All Saints, Mudeford, during an inter regnum, and was much loved by his parishioners.

While he was at Ditton, he was forced by pressure of work to neglect his collection, and it was attacked and almost destroyed by some kind of museum pest, so that all that remained in the store boxes was neat rows of pins. What a tragedy. Two species of butterfly which were lost and never taken again in his later years were the pale clouded yellow (*Colias hyale* L.) and the large tortoiseshell (*Nymphalis polychloros* L.). It was always a disappointment to him that he never took a purple emperor (*Apature iris* L.) either on the wing or as a larva.

When he was on the point of retiring, Mr. Carr was considering whether to make a second collection of Lepidoptera, and during a visit to Sandbanks he happened to see two *Celerio livornica* Esp (striped hawk) at rest on a fence. The sight (and capture) of these lovely moths decided the question for him, and soon he was throwing himself with great energy into the task of building up a fresh collection from scratch. In about fifteen years he had nearly filled sixty cabinet drawers, and in one year he set more than eleven hundred insects, and they were beautifully set, too. In his younger days he had cycled great distances, but latterly he depended on various friends for transport, though if none were available, he would take a bus to some Dorset locality, like Hod Hill, Badbury Rings, Winspit or Bloxworth, or else catch the train to Brockenhurst and walk for miles through the New Forest, often taking a beating tray with him, for he was a most enthusiastic and energetic beater for larvae. His delight in seeing a desirable larva in his tray was a joy to behold, as once at Whiteparish, when two very large larvae of *Catocala sponsa* L. (dark crimson underwing) arrived simultaneously. In Dorset he worked hard for varieties of the "blues", and at Winspit he found a nice aberration of *Plebejus argus* L. (silver studded blue) in some numbers, and on one of the heaths he took a series of the local speciality, *Coscinia cribaria* L. (speckled footman) in the days when it was tolerably plentiful.

He made expeditions to a number of more distant localities, but most of all he enjoyed returning to his favourite county of Kent, where he visited such places at Dungeness, Wye and Ham Street: here, on one memorable occasion, he pursued with great agility and missed a *Colobochyla salicalis* Schiff. (lesser belle) among the aspen saplings, but succeeded in catching one soon afterwards.

Mr. Carr was a great encourager of young naturalists and entomologists whom he inspired with his own enthusiasm. When eighty-four he went up to the top of Hod Hill five or six times, and had several days larva beating, including one—his last—within a week of the accident which left him an invalid for the last few years of his life.

He was a broad-minded man and a good companion in the field. He was married three times, and to his surviving wife and two daughters we offer our deepest sympathy. Most of his entomological friends have gone before him: those remaining will always treasure his memory with affection.—H.S.

1955: July 29-30, Ham Street (div. 12), one taken at light by A. Richardson (Richardson, *Entomologist*, **88**: 262; idem, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1955: 39)†. August 14, Wye (div. 12), ♀ in m.v. trap, taken by W. L. Rudland (W. L. Rudland)†; this specimen was recorded in *Entomologist*, **89**: 176, as *P. ni* in error (C.-H.). August 17, Westwell, ♂ taken at light by P. Cue (Scott, *Bull. K. Fld. Cl.*, **1**: 10)†.

Variation.—Warren (in Seitz, *Pal. Noct.*, 346, fig. 64c) described as ab. *cinerea*, an European form having "the ground colour dull ashy grey with scarcely any dark markings, except the subterminal line, and no purplish suffusion, the silvery mark a somewhat triangular loop". The Kentish immigrants conform to this; but it is a distinct subspecies, and not an ab. (C.-H.).

First Record, 1955: Ham Street Woods (Richardson, *Entomologist*, **88**: 262).

P. acuta Walk.: Tunbridge Wells Gem.

Immigrant.

1870: Tunbridge Wells, one captured by H. P. Robinson, May 1870, which entered his drawing-room window attracted by the light (Moore, *Ent. mon. Mag.*, **7**: 138; Vaughan, *Proc. ent. Soc. Lond.*, 1870: xxxiii). The specimen is in R.C.K. (C.-H.).

First Record, 1870: Tunbridge Wells (Robinson, *teste* Moore, *Ent. mon. Mag.*, **7**: 138).

Unca trigemina Wernb.: Dark Spectacle and **U. triplasia** L.: Light Spectacle.

The "Dark Spectacle" has for long been known by the scientific name "*triplasia* L.", and indeed this is still the name used for it in Heslop. Yet, the correct name for it is *trigemina* Wernb., and *triplasia* L. should refer to the lighter species. The synonymy should therefore read:—

"Dark Spectacle"	"Light Spectacle"
Unca trigemina Werneberg, 1864	*Unca triplasia* L., 1758
triplasia auctt. nec L.	*tripartita* Hufn., 1766
	urticae Hübn., 1814-17

I have retained Heslop's nomenclature below for the sake of conformity and for no other reason.

Unca triplasia L.: Dark Spectacle.

Native. Gardens, marshes, waste places, etc.; on *Urtica dioica*, hop. "Rather rare on the coast of Kent" (Barrett, *Lep. Br. Isles*, **6**: 142).

Note: Except perhaps in the area bordering the metropolis, this is a very scarce moth in Kent. There appears to be no record of occurrence during the period 1926-48, and only odd ones since.

1. Lee, June 3, 24, 1861, one, June 30, 1862; both this and *tripartita* very common July 1, 1862, flying among nettles and low plants (Fenn, *Diary*); two, June 30, 1897 (B. A. Bower, *Ent. mon. Mag.*, **33**: 280); a few, 1900 (Carr, in Buckle and Prout, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1901: 66). Lewisham, one, July 30, 1902, in E. Nottle coll. (C.-H.). Forest Hill, one, June 30, 1886 (Cansdale, *Ent. Rec.*, **2**: 69). Sydenham, several, 1874-91 (Sellon, *Ent. Rec.*, **2**: 164); one, 1905, in E. Nottle coll. (C.-H.). Burnt Ash, larvae on nettle (West, *Ent. Rec.*, **18**: 230). Westcombe Park; Farnborough; Southend, Catford; Hither Green; Eltham; Beckenham (*Wool. Surv.* (1909)). Erith; West Wickham (*V.C.H.* (1908)). Chislehurst, one, August 25, 1905, one, June 24 1908 (S. F. P. Blyth); one, June 21, 1924

(A. R. Kidner). Sidcup, August 8, 1909, June 26, 1910, August 29, 1911, July 1, 1913, June 22, 1914 (A. R. Kidner). Bromley Town, larvae on hop in garden, imagines bred (W. A. Cope). Bexley, one or two bred (L. T. Ford). Catford, one in garden at dusk, June 29, 1925 (W. E. Busbridge, *Diary*). Blackheath, one at m.v.l., June 5, one at m.v.l., August 11, both in 1959 (A. A. Allen).

2. Near Woolwich*, 1862, at flowers, June 18, and again in August (J[ones], *Ent. week. Int.*, **10**: 187). Greenhithe* (Farn MS.). Luddenham, odd ones, 1913-14 (H. C. Huggins). Dartford Marshes, one, June 8, 1952 (J. F. Burton).

3. Blean, nine, 1901-05, in J. Platt Barrett coll. (C.-H.).

4. Minster, two, 1919, one, 1920, in H. G. Gomm coll. (C.-H.).

5. Chelsfield, 1948 (A. M. Swain).

6. Springhead, odd ones, 1906-09 (H. C. Huggins). Pinden, one, August 28, 1951 (E. J. Hare).

6a. Darenth, bred 1861, larvae on nettle (Huckett, *Ent. week. Int.*, **10**: 52).

7. Wigmore Wood, one, August 25, 1862 (Chaney (1884-87).

9. Margate, one, 1905, in H. G. Gomm coll. (C.-H.). Ramsgate [c. 1885] (W. A. Cope).

[11. Hoads Wood, 1953 (P. Cue, in Scott (1964)).]

12. Canterbury City, one, 1893 (S. Wacher MS.). Wye, one at m.v.l., August 26, 1955 (W. L. Rudland) (Scott (1964) refers). Ham Street.—September, 1950, in Orlestone Woods, a nearly full-grown larva "beaten from broom or near-growing undergrowth," imago emerged 1951 (P. Cue, *in litt.*); July 17, 1956 (W. L. Rudland, in Scott (1964)); one at m.v.l., June 6, one, July 31, 1959, both in Orlestone Woods (B. F. Skinner). [("Common in Ashford" (Scott (1936)), refers to *U. tripartita* Hufn.).]

13. Tunbridge Wells district, scarce (Knipe (1916)).

16. Folkestone Town, one, September 9, 1955 in m.v. trap (A. M. Morley).

First Record, 1861: Darenth (Huckett, *Ent. week. Int.*, **10**: 52).

U. tripartita Hufn. (**urticae** Hübn.): Light Spectacle.

Native. Marshes, woods, gardens, waste places; on *Urtica dioica*, "male fern." The species appears to have become appreciably more numerous generally during the past fifteen years or so.

1. Recorded from many localities. More recent records are: Sidcup, 1937; Farningham Wood, few larvae, September 25, 1930, September 30, 1933, October 2, 1936, September 11, 1937 (A. R. Kidner). Petts Wood, three, 1947, one, 1950 (E. Evans). Bexley, odd ones in different years, two in 1950 (L. T. Ford); one, 1951, four, 1952 (A. Heselden). Hayes (E. J. Trundell). West Wickham, 1951, 1954 (C.-H.). Abbey Wood, 1952 (A. J. Showler). Welling, seven, August 5-23, 1952 (A. Heselden). Orpington, 1948, 1953 (L. W. Siggs). Blackheath, 1959, fairly rare at m.v.l. (A. A. Allen). St Mary Cray (R. G. Chatelain). Bromley, 1960 (11), 1961 (17), 1962 (13), 1963 (11), 1964 (30), 1965 (21) (D. R. M. Long).

2. Greenhithe* (Farn MS.). Luddenham, one (H. C. Huggins). Dartford (B. K. West). Cliffe Marshes, August 21, 1960 (R. G. Chatelain).

3. Broad Oak, frequent at light and buddleia, 1935-56 (C.-H.). Herne Bay, August 18, 1938 (A. J. L. Bowes). Eddington, ♂, May 9, 1952 (D. G. Marsh, *Diary*).

4. Deal (Fenn, *Ent. Rec.*, **2**: 203). Minster, 1901, 1904-05 (J. P. Barrett coll.); larva on *U. dioica*, August 26, 1919, reared May 23, 1920 (H. G. Gomm, *Diary*). Sandwich, c. 1950; Ham Fen, c. 1950 (C.-H.).

5. Farnborough* (W. Barnes, in *Wool Surv.* (1909)). Chevening, severally, 1912-14, 1917-18 (Gillett, *Diary*). Westerham (R. C. Edwards). Chelsfield, 1948, 1951 (A. M. Swain).

6. Gravesend, larva feeding on male fern in garden (F. T. Grant). Eynsford Downs, larva, July 4, 1934 (A. R. Kidner). Pinden (E. J. Hare). Fawkham, abundant at light, August 1952 (G. G. E. Scudder).

6a. Darenth (Huckett, *Ent. week. Int.*, **10**: 52). Knights Place, 1880 (Pye, *Rochester Nat.*, 1896: 51). Cobham, May 27, 1912 (F. T. Grant).

7. Wigmore Wood, one, 1861 (Chaney (1884-87). Westwall, 1937, 1947, 1949 (Scott (1950)). Boxley (A. H. Harbottle).

8. Folkestone* (Ullyett (1880)). Brook*; stowting; Wye* (C. A. W. Duffield). Barham (A. G. Maconochie). Dover; Shepherdswell; Deal*; Betteshanger (E. & Y. (1949)). Elham, one, July 10, 1926 (W. E. Busbridge, *Diary*). Brook, four, July 3, 1951 (H. King). Betteshanger, July 6, 1957 (R. F. Bretherton).

9. Birchington, one, 1938 (C.-H.). St. Peters, at m.v.l., August 20 (1), September 19 (1), 1957 (W. D. Bowden).

10. Sevenoaks (W. E. Busbridge).

11. Wateringbury (*V.C.H.* (1908)). Edenbridge, at lavender and "valerian", 1929-30 (F. D. Greenwood). Hoads Wood, 1963 (P. Cue). Aylesford (G. A. N. Davis). Bethersden, August 14-20, 1960 (C. R. Haxby and J. Briggs). Sevenoaks Weald, May 24, 27, June 3, 18, August 6, 21, 1959 (about 20); May 5-August 30, 1960 (10) (E. A. Sadler).

12. Canterbury City, at light, c. 1890 (S. Wacher MS.); larvae and imagines common, c. 1947 (J. A. Parry). Chartham, c. 1952 (P. B. Wacher). Ashford (P. Cue); common (1960) (M. Singleton) Wye, June 5-July 10, 1953 (7), May 19-July 11 (6), July 29-September 13 (8), 1954, May 25-July 20 (6), August 29 (1), 1955, June 21-July 27 (13), August 16 (1), 1956; Willesborough, May 10-July 18, 1954 (9), May 29-July 22 (22), August 4-September 3 (18), 1955, June 11-July 30 (21), August 10-25 (5), 1956, June 6-July 19 (17), July 28-August 31 (17), 1957, May 25-July 9 (14), August 21-22 (2), 1958, June 3-July 21 (29), 1963 (W. L. Rudland). Ham Street, August 15-20, 1960 (C. R. Haxby and J. Briggs).

13. Tunbridge Wells (E. D. Morgan); frequent, 1957-59 (L. R. Tesch, *fide* C. A. Stace); three, 1959 (C. A. Stace). Goudhurst, common (W. V. D. Bolt).

14. Sandhurst, at "valerian," and light (G. V. Bull). Hawkhurst, two, 1951 (B. G. Chatfield).

15. Dymchurch, five, 1952 (Wakely, *Ent. Rec.*, **65**: 44). Dungeness, June 13 (1), July 8-August 2 (4), 1962, July 2-August 3 (9), 1963, May 28-August 28 (15), 1964 (R. E. Scott); June 30-July 3, 1956 (R. F. Bretherton).

16. Folkestone (Morley, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1954-55: 39)

VARIATIONS.—In my series I have one that is very much darker than the rest, and in which the whitish marking is virtually absent; it was taken by G. V. Bull, at Sandhurst, June 12, 1952 (C.-H.).

FIRST RECORD, 1857: West Wickham Wood (Tugwell, *Ent. week Int.*, **3**: 11).

OPHIDERINAE

Catephia alchymista Schiff.: Alchymist.

Suspected immigrant. Woods, etc.

1882: Near Dover, one taken by Mr Davies at sugar in a wood near Dover (div. 8), in (June) 1882 (Webb, *Entomologist*, **15**: 162; South, *Moths Br. Isles*, 1st edition, **2**: 78). The locality was Long Wood (sometimes called "Square Wood"), near Poulton (Webb (1891); Cardew, *Entomologist*, **41**: 311).

[1896: Folkestone.—"A somewhat worn *Catephia alchemysta* taken at Folkestone in 1896 fetched £2", at sale of G. Watkinson coll. (de Worms, *Entomologist*, **96**: 24).]

1919: Oaken Wood, Barming (div. 11), ♂ taken at sugar by C. H. Hards, June 17, 1919 (C. H. Hards, *in litt.*; Classey, *Ent. Gaz.*, **14**: 125).

1934: Kingsdown (div. 8), ♀ taken by H. Charles, August 12, 1934 (Charles, *Entomologist*, **67**: 230; idem, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1934-35: 47; Cockayne, *Entomologist*, **67**: 276). Dungeness (div. 15), ♂ taken on a post by F. H. Lees, September, 18, 1934 (Lees, *Ent. Rec.*, **48**: 17; Whitehouse, *Entomologist*, **68**: 38).

FIRST RECORD, 1882: Near Dover (Webb, *Entomologist*, **15**: 162).

Acontia luctuosa Schiff.: Four-spot.

Native. Chalky fields, waste places especially those in dry situations; foodplant unrecorded. Very local, but often fairly plentiful where it occurs.

1. Beckenham, a number flying in the sunshine, c. 1876 (Cockerell, *Entomologist*, **16**: 233). Lee, one at lighted window, July 8, 1887 (Fenn, *Ent. Rec.*, **2**: 90). Bexley (L. W. Newman, in *Wool Surv.* (1909)); severally, 1920-24, larva, June 6, 1920, larva, July 3, 1921 (A. R. Kidner); (L. T. Ford). Chislehurst, one, May 8, 1912 (S. F. P. Blyth). Sidcup, severally, 1912, 1924-27, 1929, 1931-32, 1934 (A. R. Kidner). Petts Wood (A. M. Swain). Plumstead; West Wickham (de Worms, *Lond. Nat.*, 1955: 64). Sundridge Park, frequent, 1946-48 (J. F. Burton). Joydens Wood, c. 1947 (D. F. Owen). Abbey Wood, at light, 1952 (A. J. Showler). Orpington, one, 1957 (R. G. Chatelain). Lee, July 16, 1952, July 7, 1957, June 9, 1962; all at m.v.l. (C. G. Bruce).

2. Abbey Wood Marshes, 1954 (M. Smith, *teste* A. J. Showler).

3. Ridgeway, August 11, 1933 (A. J. L. Bowes). Broad Oak, one in 1936, certainly a stray (C.-H.). Whitstable, several in South Street (P. F. Harris). Eddington near Herne Bay, odd ones at light, July 6 (♂), August 8 (♂), 1950, May 26, 1953 (♀) (D. G. Marsh).

4. Ickham, one, c. 1956 (D. G. Marsh).

5. Cudham (Frohawk, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1886: 43). Westerham (Prout, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1898: 8). Farnborough (W. Barnes, in *Wool Surv.* (1909)) Green Street Green (Hewitt, in *Wool Surv.* (1909)). Chevening, July 16, 1914 (Gillett, *Diary*). Halstead (S. Wakely).

6. Gravesend, "Abundant in chalky places. I captured 150 in the hope of finding Solaris among them" (Button, *Entomologist*, **4**: 129); abundant everywhere in suitable localities around Gravesend (idem, *Entomologist*, **5**: 222); common in one place (H. C. Huggins); one at street lamp, August 17, 1914; also noted at Highstead Rise, Downs Road, and on the Golf

EXCHANGES AND WANTS

Wanted.—Part 6, Vol. 4: Parts 2, 3, 7 and 8, Vol. 5: Part 1, Vol. 15: of "The Entomologist's Record".—*State price to Box 172, 'The Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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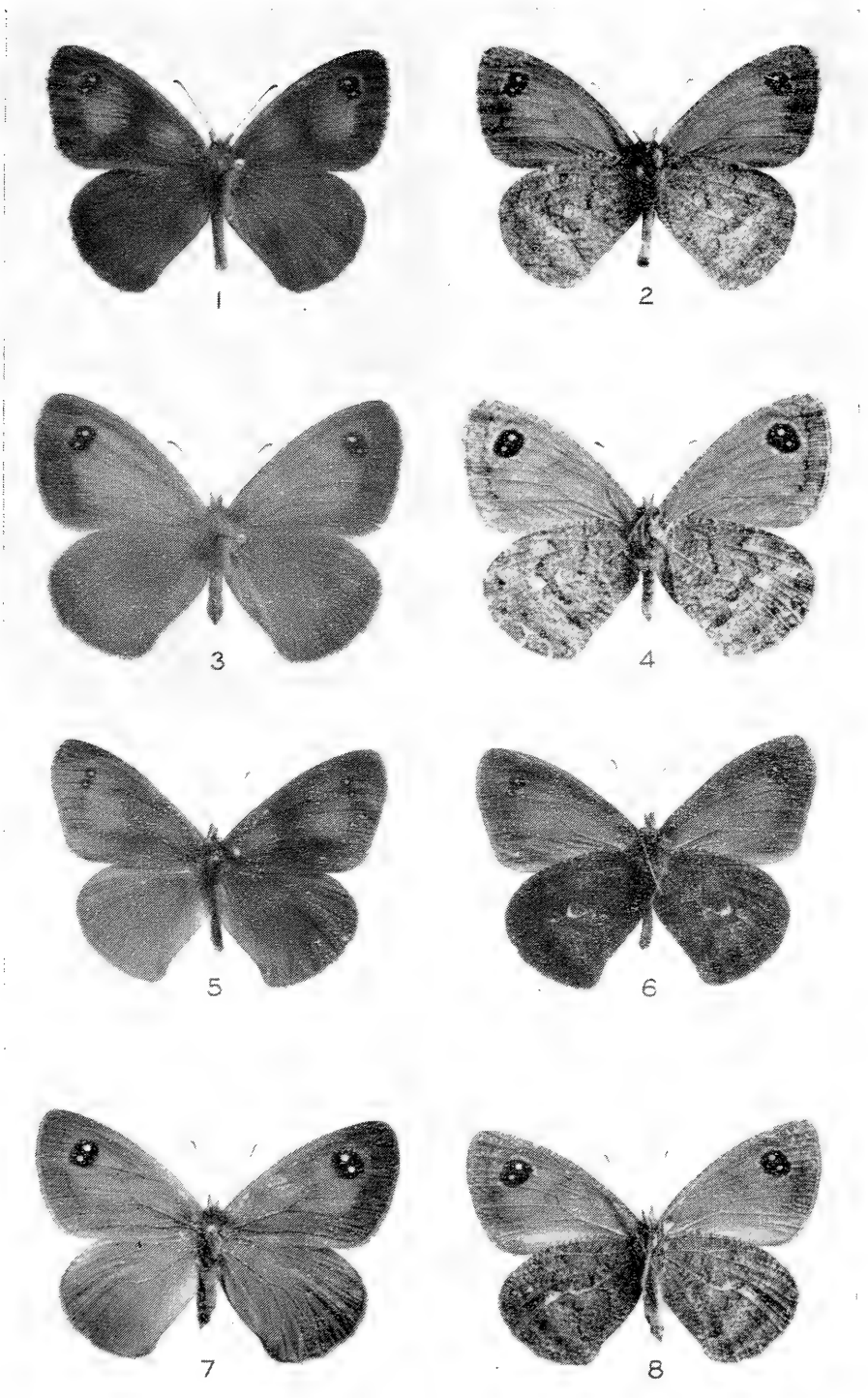

Photo : H. N. Wykeham.

Pseudonympha southeyi wykehami subsp. nov.

Fig. 1. ♂ Holotype (upperside). Fig. 2. ♂ Holotype (underside).
Fig. 3. ♀ Allotype (upperside). Fig. 4. ♀ Allotype (underside).

Pseudonympha southeyi kamiesbergensis subsp. nov.

Fig. 5. ♂ Paratype (upperside). Fig. 6. ♂ Paratype (underside).
Fig. 7. ♀ Allotype (upperside). Fig. 8. ♀ Allotype (underside).

Two New Subspecies of *Pseudonympha southeyi* (Pennington)* (Lepidoptera: Satyridae) from the Western Cape Province

By C. G. C. Dickson

**Melampias southeyi* Pennington, J. ent. Soc. S. Afr., Vol. XVI, No. 2, p.p. 95-99, figs. 4-5 (1953).

As a result of the great extension, in a westerly direction, of the known range of *Pseudonympha southeyi*, a butterfly which was first found in the New England district of the Eastern Cape Province, two further races of this insect are now recognised and these are described below.

Pseudonympha southeyi wykehami subsp. nov.

Similar basically to the nominate race, the upperside being dark brown with, in the forewing of the male, a usually dull and ill-defined sub-basal fulvous area and a distinct and much larger reddish-orange patch adjoining the rather small subapical, black, bipupillate ocellus—with the colouring continuous from near the base of the forewing in the female—and the hindwing devoid of any fulvous colouring.

Male. Upperside.

Forewing. In the holotype and one of the paratypes, the sub-basal marking is comparatively prominent (but without clearly defined edges) and distinctly reddish-orange in colour. Main area inclined to be a little more conspicuous, and often of a somewhat brighter, more orange tone than is usual in typical *Ps. southeyi;* its size variable but on an average about normal and its lower portion reaching or stopping just short of vein 1. Inner edge of patch not sharply defined but outer edge comparatively clear-cut.

Hindwing. As in the nominate race and unmarked apart from an indistinct darker line submarginally.

Underside.

Forewing. Reddish-orange area (more orange than on upperside), extends from near base up to (or nearly so) a very dark submarginal streak and, inferiorly, falls below vein 1. Ocellate spot somewhat larger than on upperside. Although quite marked individual variation may occur in specimens, there appears to be no entirely constant difference in the forewing underside of the two races.

Hindwing. Dark or fairly dark brown, variegated with whitish and marked with fine dark striolation. The irregular dark discal line generally more prominent against its background than in *southeyi southeyi* (and the more or less developed, first line from base prominent in some specimens); the small dark, submarginal, at least partially ocellate, spots much as in the nominate race and varying individually in their development. In the present race, there is a characteristic lighter zone beyond the discal line.

Length of forewing: 18-21.5 mm. (20.5 mm. in holotype).

Female. Upperside.

As is the case in the nominate race, both wings of a less dark shade of brown than in the male; but less greyish than in nominate females available for comparison.

Forewing. Reddish-orange colouring continuous from near base to ocellate spot and area below it, as in the female of the nominate race.

Hindwing. As in the male, apart from the less dark tone.

Underside.

Forewing. Practically as in the male.

Hindwing. Allowing for individual variation, very much as in the male and with the pale greyish irroration no lighter or more intense (vide description of typical race); a light, rather square patch towards the base of area 4 tending to stand out rather prominently against the background, in most specimens.

Length of forewing: 19.75-21.75 mm. (the latter figure, in allotype).

♂ Holotype and ♀ allotype: Karroo hills (western portion of Wagenbooms Bergen) between Matroosberg (formerly Triangle) Railway Station and Eendracht, Western Cape Province, 6-13.XI.1966 (taken by the writer); two ♂ and four ♀ paratypes with same data (except for one ♀, taken by Dr. Jeffrey Kaplan), and others as follows:—two ♂♂ and one ♀ from same locality, collected on 16.X.1966 (C. W. Wykeham) and 6.XI.1966 (by the writer); one ♂ (the original capture): Eendracht, 27.XI.1963 (C. W. Wykeham).

The holotype and allotype and one male paratype have been given to the British Museum (Natural History) (British Museum type numbers: ♂ H.T. Rhop. No. 18545, ♀ A.T. 18546, ♂ P.T. 18547).

Variation is noticed principally in the development of the sub-basal colouring of the forewing upperside of the male and in that of the light scaling and darker marking of the underside, in both sexes. The latter feature is most apparent in the first male which was taken.

When comparing the male genitalia of a single specimen of this race with Dr. G. van Son's clear description and figure of those of *Ps. southeyi southeyi* in "The Butterflies of Southern Africa" (Pt. II, p. 132, fig. 145), some difference was observed. The falces were not more than half the length of the uncus and were more slender than in the figure; the aedeagus was not (as stated in the text) almost one-third longer than the valve, but about 15.5 per cent. longer, while its excised basal portion was considerably shorter than appears from the figure to be the case in typical *Ps. southeyi.*

Most of the specimens were found on a high rocky ridge, and nearly all of them were visiting the mauve flowers of a Composite shrub (*Aster fruticosus* L.), together with other Satyrids. The normal flight is by no means rapid; it is more or less irregular and not far above the ground. The butterfly was seen to settle fairly frequently on the ground or on small rocks.

A note by its discoverer, my nephew C. W. Wykeham, is given hereunder:—

"On a collecting trip in late November, 1963, Mr Peter Dryburgh and I stopped at the summit of the Koo Pass at a place named Eendracht.

"While searching for specimens of *Thestor dukei* van Son, I happened upon a specimen of the above race, but could not discover further specimens. A search two weeks later failed to provide more examples. On recent trips to the area specimens were found in small numbers at a spot some 10 miles north of the original locality.

"The flight is slower than that of *Pseudonympha trimenii* Butler and has a less regular beat. The species frequents the mauve Composite flowers but otherwise usually settles on the ground and stones. The butterfly appears to fly about the summits of the koppies in the heat of the day."

Pseudonympha southeyi kamiesbergensis subsp. nov.

Male. Upperside.

Forewing. Compared with most but not all examples of the nominate race, the black subapical ocellus is frequently reduced in size (and sometimes in the form of two small rings); while there is less disparity in the size of the bluish-white pupils, the lower one generally being but little smaller than the upper one.

Hindwing. As in nominate race.

Underside.

Forewing. Reddish-orange colouring from base usually a little reduced in area. (The tone varies, as in the nominate race, and in some cases is distinctly ferruginous.) Ocellus often reduced on underside also, but with more difference as a rule in the size of the pupils.

Hindwing. The dark markings no more distinct than in typical *Ps. southeyi;* the light-grey to whitish scaling often indistinct and not very pronounced in any of the specimens examined (in two of them, more extensive than in the others). A feature which may be quite prominent in the present race (as in the male figured) is the light crescentic marking at the distal end of the cell. The small dark submarginal ocelli more often, than in the nominate race, with distinct, light centres.

Length of forewing: 20-21.5 mm. (21 mm. in holotype).

Female. Upperside.

Forewing. The reddish-orange area from base is, at least in the allotype, rather markedly constricted about half-way along its length; its demarcation not clear-cut except along distal edge, which is bounded by an irregular dark-brown line.

Hindwing. As in male, apart from the lighter tone (which applies to upperside as a whole).

Underside.

Forewing. Reddish-orange area constricted as on upperside but, excepting outwardly, its demarcation better defined; an irregular, inwardly-concave, ferruginous line across this area, well beyond cell, and the usual dark line distally a little beyond its outer limit, forming the continuation of the forementioned line. Apical and terminal areas irrorated with dark and light scaling.

Hindwing. First dark, irregular line from base and the similar discal line clearly defined; the irregularly-disposed light scaling fairly pronounced and more whitish than in the nominate female.

Length of forewing: 21.5 mm.

♂ Holotype and ♀ allotype: Kamieskroon, Little Namaqualand, 21 and 23.X.1964 (D. A. Swanepoel); four ♂ paratypes with same data, including dates of capture of 21-23.X.1964.

The holotype and allotype are in Mr. Swanepoel's collection, one ♂ paratype has been presented to the British Museum (Natural History), another to the Transvaal Museum and two are in the writer's collection).

(The British Museum specimen is the example which is figured.)

When examining the male genitalia of a single example of this race, the falces were found to be about half the length of the uncus; the aedeagus was of the same length as the valve and the length of the basal excised portion was about 28 per cent. of the total length; the ventral margin of the valve was concave at about a quarter of the distance from the base of the valve, while the tip of the valve was bluntly pointed on the dorsal side.

This race is one of the more recent of the numerous discoveries of Mr. Swanepoel, whose consistent study of South African butterflies during the past 40 years has added so much to our knowledge of the subject. The subspecific name which has been used was proposed by Mr. Swanepoel and a note which he has furnished on this butterfly appears hereunder.

"When I first saw this dark Satyrid on the Kamiesberg I was impressed by its very rapid and sustained flight, similar in a way, to that of *Pseudonympha gaika* Riley. The butterfly was particularly active when warm and sunny weather prevailed. It was captured among fairly tall shrubs growing, in some places, very densely on the northern slopes of a high peak of the Kamiesberg near Kamieskroon."

Mr. K. M. Pennington and Mr. W. Teare have most kindly loaned specimens of typical *Ps. southeyi* for comparison with the two races concerned, those of Mr. Teare having been freshly-caught examples; while Mr. Pennington had given to the writer, many years previously, two of his male paratypes of this butterfly. The descriptions of *Ps. southeyi wykehami* and *Ps. southeyi kamiesbergensis* have been perused, respectively, by Mr. Pennington and Mr. Swanepoel.

"Blencathra," Cambridge Avenue, St. Michael's Estate, Cape Town.

A Note on *Pseudonympha trimenii* Butler (Lepidoptera, Satyridae)

By C. G. C. Dickson

When describing a new race of *Pseudonympha trimenii Butler* (*Ent. Rec.*, **78**: 85-87), the writer referred to another race from Little Namaqualand, which Dr. G van Son was describing. The description of the latter, under the name of *Ps. trimenii namaquana*, duly appeared in the Annals of the Transvaal Museum, vol. **25**, No. 4, p. 88, on 30th June 1966 and Dr. van Son states, *inter alia*:—"The present subspecies differs from the nominate *Ps. trimenii* in the diffuse and reduced (occasionally absent) basal orange-red patch of forewing upperside and in the much narrower white outer edging of the ocellate spots of the hindwing underside". It is quite distinct also from *Ps. trimenii ruthae*, the first mentioned race, as well as from *Ps. trimenii nieuwveldensis* (described by the present writer (*Ent. Rec.*, **78**: 273-275)).

In numerous specimens of *Ps. trimenii namaquana* now at the disposal of the writer, while of limited extent in the male, the rather noticeably crescentic-shaped orange-red marking below the black ocellus of the forewing upperside is yet quite conspicuous; the ocellus itself is generally decidedly large. In female specimens the orange red marking below the ocellus is similarly shaped, though in most specimens, more extensive than in the male. On the hindwing underside the usually relatively large areas of plain greyish-brown colouring are at once noticed in this race. The

forewing is generally of a far more pointed shape than in typical *Ps. trimenii* from the Cape Peninsula.

During a collecting trip to Little Namaqualand in 1962, this butterfly was met with in numbers near Kamieskroon, on 3rd September, flying about rocky ground where the grass (*Danthonia* sp.) which is the larval foodplant, was present. As it clearly represented a distinct race, a good pair of specimens were given to the British Museum (Natural History).

"Blencathra", Cambridge Avenue, St. Michael's Estate, Cape Town.
17.xii.1966.

Isle of Canna, 1966

By Dr. J. L. Campbell

The summer of 1966 was the best for many years in the Hebrides. No storms disturbed us from the week-end of 22nd May until 'Hurricane Faith' started to make herself felt on 3rd September. In consequence of this, and of an unusual number of mild cloudy nights in June (usually June nights here are cold, clear, and short), not only were more migrants seen here than for many years past, but also the moth trap catches were the highest recorded, the season's total, over 10,500 beating the previous best of 7,910 in 1956. Many species produced their highest numbers since then, or since 1955, a year which produced an exceptional August similar to that of 1966.

Regarding the migrants, it is very interesting that all those recorded by Mr. H. C. Huggins from Dingle in 1966 also turned up here with the exception of *C. croceus*, which has not been seen here since 1947. Some of them occurred in very large numbers. Altogether ten specimens of *L. exigua* were taken in the trap, of which two taken on 1st September were in perfect condition. No fewer than 283 specimens of *P. gamma* were taken in the trap, the previous highest total being 64 in 1955; many were seen flying at the end of May and in the late summer and autumn. *L. unipuncta* was taken in the trap on 10th May, as has already been recorded (*Record*, 15.ix.66, p. 215). *N. noctuella* also made its best total, 29 (previous best, 18 in 1962). Of these, 12 were taken on 22nd September, a night which also produced the first specimen of *N. obstipata* I have taken. *U. martialis* swarmed towards the end of September, the same night producing no fewer than (approximately) 379 specimens in the trap, the highest number in one night for a single species at any time. Another probable migrant was *E. occulta*, of which a very worn specimen was taken in the trap on 23rd August.

New species added to the Canna collection during the summer, besides *N. obstipata*, were *E. hastata*, 13th June; *E. fasciaria* ('Barred Red'), three specimens, 2nd, 6th and 13th August; *E. castigata* (identified by Mr. D. S. Fletcher, to whom I am indebted for this and other identifications); and *P. interrogationis*, 30th August.

Moths of which only one specimen had previously been recorded were *E. protea* and *B. viminalis* (former first since 1955, latter first since 1958); *C. trapezina*, three specimens, the first on 25th August, a night when there were 631 moths in the trap, the second highest total of macros ever caught (best 634 on 31st July 1964), others on 27th August and 9th September; previously only one specimen in 1956; *C. xerampelina*, 31st August; only previous specimen, 1958. A specimen of *C. matura* on 30th July was

the first taken in the trap; I had not encountered this species here since July 1945, when two specimens were taken on a sugared fence-post on a steep grassy slope above the shore.

August 1966 was the best August here since that of 1955, in which year 3,257 moths were taken in the trap in 14 nights, amounting to 81 different species. In August 1966 these totals were easily beaten; on 17 nights the trap caught 4,962 moths of approximately 92 different species. Of this total no fewer than 1,877 were *T. pronuba* and 934 were *T. ianthina.* Comparison of the numbers of certain species taken in August 1955 (for which the reader may be referred to the *Record* of 15.iii.56, p. 66-67) and August 1966 are interesting.

Increase, August 1966 over August 1955

	1955		1956	
	Number	Average per night taken	Number	Average per night taken
T. comes	26	3·25	100	7·69
T. pronuba	396	28·18	1877	110·41
T. ianthina	164	12·61	934	54·96
A. monoglypha	89	7·41	303	18·93
A. secalis	128	9·84	362	21·30
		Decrease		
E. tritici	159	14·45	13	1·62
A. glareosa	179	22·37	145	13·18
A. xanthographa	395	32·91	123	9·46
C. graminis	78	6·00	8	1·66
H. micacea	849	65·30	56	5·60
H. lucens group	221	26·55	7	1·40
L. testacea	99	11·00	3	1·00

In fact, *pronuba* and *ianthina* together totalled 3,768 and made up 35·44% of the whole summer's catch. On certain nights the predominance of the yellow underwings was extraordinary; for example on the night of 9-10th August, out of 102 moths in the trap, 73 were *ianthina,* and on the night of 2nd-3rd September, out of 304 moths in the trap, 219 were *pronuba.*

Other species that were unusually numerous last summer were *S. populi,* 93 (previous best, 15 in 1964); *N. confusalis,* 8 (only 25 have been taken since the trap was started in 1951); *S. menthastri,* 164 (109 in 1956); *M. oleracea,* 448; *M. dentina,* 71; *O. lunosa,* 172 (132 in 1956); *P. chrysitis,* 169; *P. pulchrina,* 190; *H. proboscidalis,* 46 (previous best 14 in 1958); *C. truncata,* 188; *C. citrata,* 115; *X. fluctuata,* 96; *H. furcata,* 28; *O. luteolata,* 60; and *B. repandata,* 85, including two specimens of var. *conversaria,* which I had never seen before. In September, *A. ypsilon* turned up in very large numbers (279), the highest in a whole year before being 34 in 1964.

On the other hand, *Notodontidae* were scarce, only one *vinula* and one *ziczac* occurring, and only five specimens of *D. caesia* turned up; the best seasons for this have been 1956 (19) and 1964 (16). There were no *lithoxylea,* and no *typica. E. prasina* produced one and *A. nebulosa* two specimens.

As usual there were some long periods of emergence. Thus *S. populi* occurred in the trap from 26th May to 7th July; *S. menthastri* from the

same date in May until 2nd August. *D. conspersa* occurred from 26th May to 8th August, *T. pronuba* from 15th June to 3rd October, *X. monoglypha* from 30th June to 26th September, *E. lucipara* from 31st May to 11th August, and *A. tripartita* from 27th May to 18th August. *O. luteolata* occurred more or less continuously from 10th May to 8th August, with single specimens on 20th August and 18th September, possibly a partial second brood.

Altogether the total number of species taken was approximately 159, which is the highest for any one year.

Apart from the migrants *atalanta* and *cardui,* butterflies were not nearly so plentiful as moths. *Atalanta* and *cardui* bred here in large numbers for the first time for a good many years, and as emergence in captivity began on 20th August, it was hoped that the autumn of 1966 would see many of these butterflies around the buddleia and michaelmas daisies in our garden. This was not to happen: on the evening of 3rd September the hurricane began, and it blew until the 8th, setting up a tremendous swell on the shore that caused the loss of three-quarters at least of the island's lobster pots, and either decimating the emerging butterflies or else blowing them off the island. Very few indeed were seen thereafter. Nor were any specimens of *V. urticae,* or larvae, seen during the summer and autumn. *Io* has disappeared from the island (I have not seen it since 1961), and all the other species of butterflies, except for *P. brassicae,* which is reinforced by immigrants, are scarcer than they used to be; this applies particularly to *A. aglaia, M. jurtina,* and *S. semele.* It used to be that one could see most of the 15 species of butterflies in the Canna collection in our garden during the summer, but not any more. It is not easy to understand the reason for the decadence of native butterflies here, as there has been no application of poisonous insecticides to crops or grassland.

The season ended with the appearance of an occasional *C. brumata* and *H. defoliaria* at lighted windows on the very few calm nights in November and December, and the finding of a *P. meticulosa* on a wych-elm in the garden on 17th December. It was taken indoors, fed, and released.

The following micros taken in the trap during the summer were identified at the British Museum:—*Acleris rhombana* Hb., *A. emargana,* F., *A. sparsana* F., *Notocelia uddmanniana, Endothenia antiquana,* and *Udea martialis* Gu., which has already been referred to. I am obliged to Messrs. D. S. Fletcher and J. D. Bradley for help with various identifications during the summer. A leaf hopper which appeared in the trap in large numbers in late October was identified by Mr. W. J. Knight of the British Museum as *Typhlocyba ulmi* L.

A note on the Hydraecias in the West of Ireland

By H. C. Huggins, F.R.E.S.

Mr. D. S. Fletcher has very kindly sorted out the Hydraecias I took at Dingle last year, and all the 23 I brought home are *crinanensis* Burrows.

I am rather surprised at this as although I was pretty sure there were no *oculea* L. amongst them, I thought that there would probably be one or two *lucens* Freyer. It may be remembered that when I set 24 of the group at Ballynalacken in the Burren of Clare in 1964, fourteen were *lucens* and ten *crinanensis.*

Lucens is an insect usually associated with moors and mosses and I should have thought that the district around Dingle would have been ideal for it.

It seems very strange to me that all the moths of this group I have taken in Western Ireland except in the Burren have been *crinanensis*.

I have found *crinanensis* at Bantry, Glengarriff, Inch, Dingle and the Burren of Clare, and except in the Burren I have found no other species. At Ballynalacken, *lucens* was certainly the commoner; not only did it predominate in those I brought home, but I released a number I am certain were *lucens* which were knocked about in the trap; they were big handsome insects which unfortunately bashed themselves about when there were large numbers on a hot night.

I have so far never taken *H. oculea* L. in Ireland although both Donovan and Mr. Baynes give it as common. I think it must be a more inland insect than the other two. Mr. Fletcher and I ran through the Irish Hydraecias at the B.M. and the only *oculea* we could find had the ambiguous label "Salvage".

Notes on the Microlepidoptera

By H. C. Huggins, F.R.E.S.

***Crambus selasellus* Hübn.**

In my note on Dingle (*Ent. Rec.*, **78**: 294) I mentioned taking a very odd form of this moth there on 6th August 1966. It came to my mercury vapour light trap in the town and was, unhappily, the only *selasellus* I have seen there in five visits. After further comparison with my series I decided to take it to the B.M. on the day of the "Verrall", and Mr. Whalley, Mr. Carter and myself spent most of the morning on it.

We went through the whole of the series of *selasellus*, both British and foreign, in the collection, and also thumbed through Dr. Bleszynski's monograph, but could find nothing like it. I therefore decided to describe it, but on Mr. Whalley's representations, I allowed the genitalia to be dissected and compared with those of a normal specimen, the results being identical. I therefore describe and name it as follows:

Crambus Selasellus Hübn. ab. *brunnea* nov. ab. Head, thorax and forewings very dark umber-brown except for the usual longitudinal line, which is a clear white, and most conspicuous, ending in a sharp point. There are none of the graduations of colour between the white line and the costa as in the usual yellowish-fawn specimens. Abdomen and hindwings dark smoke colour, also the cilia.

Type: ♂, Dingle, 6.viii.1966, in coll. H. C. Huggins.

As the west of Ireland, particularly this area, is the home of many melanic races, it is probable that when more are taken, this may prove to be a subspecies. I searched as much as possible for further specimens, but *Selasellus* inhabits both salt marsh and fresh, so that it is difficult with a strong-flying moth, to track it down. I have found all this group come great distances to light. I take *C. aridella* Thbg. (*salinellus* Tutt) almost every year in my garden at mercury vapour light. The nearest place from which it can have come is three miles as the crow flies, and the nearest at which I know it occurs is eight.

I have specimens of *selasellus* from Leigh-on-Sea and Barling locally,

Ebbs Fleet in Kent, the Studland peninsula and Wareham in Dorset, and have seen specimens from Chippenham in Cambridgeshire. These were all alike except in size, the largest were the Leigh-on-Sea ones, whose locality was destroyed in 1934/6 by a house boat station.

Eudorea truncicolella Stainton. The small pale specimens mentioned in my Dingle note (*loc. cit.*) all prove to be this species; I am disappointed as I hoped they might prove to be *E. murana* Curt. of which there appears to be no certain Irish record.

Inverness-shire in 1966

By Commander G. W. Harper, R.N.(Retd.), F.R.E.S.

The increasingly gloomy tenor of my last three "annual reports" in the *Record* of the Lepidopterous health of these Northern parts may well have provoked a suspicion that the cause lay in me as much as in my observations. In fact I began myself to wonder whether I was getting lazy and disgruntled generally! Now the mercury-vapour light trap operated regularly in the same habitat year after year with careful dispersal of the catch daily undoubtedly reflects accurately the numbers of individual moths during the season. I have therefore tabulated my total catches for the last ten years with the single exception of 1962, the summer of which we spent in the New Forest and was reported separately. I have made no correction to the actual figures to allow for short holidays away from home or odd days of illness when the trap was not operated; these periods were very nearly the same for each year and the effects can therefore be safely neglected. The start and end of each season here in the North are very irregular for climatic reasons, so I have amputated my March and October records, and summarised the results for the months of April to September inclusive as follows:—

Year	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Catch	6343	6437	8445	7528	7804	Nil	7608	6106	5580	3504

These results are surely significant and I hope will acquit me of being unrealistically gloomy! Two main facts emerge; the local moth population remained very steady until 1964, when a marked decline set in, an all-time low figure being scored in 1966; secondly it seems to confirm the long held adage that severe frosty winters, such as 1958-9 and 1962-3 hit the predators harder than the larvae and pupae so that the following summer is better than average. Hope springs eternal in the entomological breast and perhaps we shall see a recovery in 1967!

The winter 1965-6 started early with considerable frost in October and very heavy snow all through November up to a white Christmas. Thereafter the winter was open with only very light snow cover, but long continued frosts, bitter east winds, and 'flu! The first mild spell began on 26th January, bringing out the first *Phigalia pedaria* Fab. at rest on a wooden post on 28th.

Another mild spell at the beginning of March made me start the m.v. trap which showed a few hibernators as well as *P. pedaria* on the move, and the first *Achlya flavicornis* L. and early Orthosias began on 15th. Numbers of all were very small.

April opened with very cold frosty weather and light snow, yet

Poecilopsis lapponaria Bdv. females which had laid most of their eggs were on my local posts on 4th; and on 7th I at last found a freshly emerged female *Brachionycha nubeculosa* Esp. on a Birch. The month continued very cold, and no sign of *Brephos parthenias* L. nor *Aglais urticae* L. could be seen in the sunshine, nor were the sallows in full bloom until 21st. The month distinguished itself on the 28th by producing storm-force winds which destroyed both the local Osprey nests, and I watched the unhappy hen for some time surveying the desolation on 30th, by which date the weather had at last become warm and sunny.

May began with warm sunshine so that on 1st I saw one of the very few *A. urticae* L. appearing this year, and a few male *Saturnia pavonia* L. were active on 3rd, but *Endromis versicolora* L. continued its decline and did not appear at all. Other Spring species were all very scarce and emergence very late and prolonged. For example, the first *Odontosia carmelita* Esp. did not appear until 12th, and *Callophrys rubi* freshly emerged on 27th, followed the next day by the first *Pieris napi* L. and *Anthocaris cardamines* L., but there was no sign of *Argynnis euphrosyne* L. until well into June. I spent Whitmonday, 30th May, which was warm and sunny, on the high ground searching for larvae or pupae of *Amathes alpicola* Zett. I chose my date badly, because the only one I found was in the act of pupating and failed to survive my handling; it is always wiser to go either earlier or later. I think this species is undergoing a rare phase again. *Anarta melanopa* Thun., however, was just emerging on this day, and could easily be captured on its fluttering maiden flights in the afternoon.

June announced its arrival with two grey immigrant *Plusia gamma* L., the forerunners of a considerable invasion by this species, and also *Agrotis ipsilon* Hufn. and *Udea martialis* Guen. later in the year, although numbers here never approached the phenomenal figures reported elsewhere, nor did any *Pyrameis cardui* L. at all reach us, and only one *Vanessa atalanta* L. in September on its return flight from somewhere in the extreme north. The month continued with stormy wet nights and only a thin trickle of the usual early summer insects. About the middle of the month most extraordinary complete defoliation of large local areas of Birch trees became painfully evident. Investigation showed that *Operophtera fagata* Scharf. larvae were the chief culprits, assisted by very heavy infestation by Aphids, the final result making many woods very wintry looking. On 15th I moved south for a ten-day holiday with my son, Dr. M. W. Harper, in Herefordshire, and although the weather remained unkind here I was able to enjoy filling some gaps with his local specialities such as a few *Drepana harpagula* Esp. and worn *Eupethecia egenaria* H.-S. among the Small-leaved Limes of the Wye valley, and other interesting insects, but they were far from plentiful. One curious catch was a very fresh example of the blackish Scottish ssp. *thules* of *Xanthorhoe fluctuata* L. so far from its home ground, from which I certainly did not bring it! Home on 26th I was greeted with cold wet weather, but the month ended with enough sunshine to bring in a quite massive immigration of *Pieris brassicae* L. from the North Sea; they were very numerous along the coast from Nairn to Inverness, but this year they hardly penetrated the glens south as far as Badenoch.

July was likewise, on the whole chilly and showery with a high proportion of north-east winds. Freshly emerged *Argynnis selene* Schf. were

seen on 2nd, as also a few by no means very worn *A. euphrosyne* L., the latest date I have seen them. The next day the first *Odezia atrata* L. appeared, also very late, and also in very small numbers this year. On 10th July occurred one of the few pleasant surprises of 1966, a new species for my local list. A male *Diacrisia sannio* L. was on the outside of my m.v. trap. It was slightly worn but undamaged, and of the true Scottish form with almost entirely black hindwings. It was probably a vagrant from the west where colonies are fairly frequent; in spite of much searching and enquiry from other collectors I have never been able to find it in Badenoch in fifteen years. On 17th, a rare sunny day, it is also pleasant to record that a visit to the extremely restricted locality of our rarest endemic butterfly, *Cupido minimus* Fues., showed it to be still holding its own—three worn males and one female were observed amongst its foodplant, *vulneraria*. A small number of *Argynnis aglaia* L., *Maniola jurtina* L., *Aricia artaxerxes* Fab. and *Polyommatus icarus* Rott. were flying with them, and every step disturbed clouds of *Perizoma albulata* Schf. A day to remember! On the next day, 18th, a second large immigration of *P. brassicae* L. was seen in Inverness, but these again seemed not to reach the upper Spey valley. The month ended much colder and stormy again, with the addition of a heavy fall of snow and hail in Aberdeen and Fife on 29th.

August weather continued the same pattern of cold east and north winds and heavy rain storms, varied by a few fine days and sharp frosts on 23rd and 24th. Light trap catches, as was to be expected, showed the usual species but in numbers far below average. The only happening of note was that I discovered on 9th a new locality near Loch Ness for *Perizoma taeniata* Steph. where I caught a nice fresh male in steady rain!

September produced some rather better weather, but the light trap catches became worse than ever. A considerable number of *P. gamma* L. was the only feature of any interest. Apart from one *V. atalanta* L., butterflies were non-existent! Pleasant anti-cyclonic weather during the third and fourth weeks did not seem to increase the numbers of imagines except *P. gamma* L. very much, nor were larvae at all common except *Hydriomena ruberata* Freyer on Sallows on the moors. Ground-feeding larvae were unusually scarce, such as *Macrothylacia rubi* L., *Phragmatobia fuliginosa* L., *Apatele menyanthidis* View. and *M. myricae* Guen.

October came in wintry fashion, snow on all the high tops, and on 5th a sharp frost at 17 degrees F. Thereafter the dismal trickle of the usual species continued. The only features of interest were the virtual absence of the usually abundant *Oporinia autumnata* Bork. and *O. dilutata* Schf. and a larger number of immigrant or perhaps locally bred *Agrotis ipsilon* Hufn. than usual. So ended the worst entomological season I have experienced since the war. Probably several factors contribute to the decline of the last three years, but I will hazard the opinion that the prevalence of bad summer weather is the dominant one. My opinion is fortified by information that some areas, such as the Western Isles, have had a much better summer this year with good numbers of Lepidoptera.

Neadaich, Newtonmore, Inverness-shire. 12.i.67.

Records of Lepidoptera in Somerset

By Lieut.-Col. A. M. EMMET

The Somerset Archaeological and Natural History Society's list of the Lepidoptera of Somerset, compiled by A. K. Turner, F.R.E.S., F.R.Met.Soc., was published in 1955. The purpose of these notes is, in a limited way, to act as a supplement to this very useful work.

I was living, on and off, in Bristol from 1957 until 1963, and visited relatives there before and since these dates. From that base I was able to make periodic collecting expeditions into Somerset. Leigh Woods, situated just over the Avon Gorge from Bristol, was the only area I worked with any continuity, but there are also three other localities I used to visit which deserve special mention. The first of these is Goblin Coombe, an attractive limestone gorge some ten miles south west of Bristol; the western part, situated in the parish of Cleeve, is covered in mixed woodland, and includes, on the plateau above, plantations of larch and young Scotch fir; but higher up the valley to the east, in the parish of Wrington, there is a stretch of open downland bearing patches of meagre heather. As far as I know, no-one has ever collected in this area before. Next, there is Shapwick, situated on the turf moors, where the terrain ranges from relatively dry heathland and scrub to water-meadows; birch is the predominant tree and there are extensive stretches of bog-myrtle. The locality is well known to entomologists and is now a nature reserve. The third of my collecting grounds was the sand-dune area at Berrow, a mile or two north of Burnham-on-Sea.

It is clear from Turner's list that the Microlepidoptera have been largely neglected in the county for many years. It is therefore unfortunate that my own interest in this group was only awakened in the summer of 1961. Though I have some records of micros to offer, these are the result of the clumsy (but sometimes lucky) fumblings of a tiro rather than the planned and comprehensive work of a discriminate collector. When almost every moth you catch is, to you, a new species, you have no incentive to go searching for rarities. My experience leads me to hope that the majority of Turner's "list" species will turn up, if looked for in the right way. The notes that follow will show that many species have a wider range and higher density than was known to Turner when he compiled his list.

I am dividing my records into three sections. Section I comprises fifteen species not listed by Turner, Section II gives records of species described by Turner as rare, local, or of doubtful occurrence; I have omitted very many records of the commoners which add nothing significant to recorded knowledge. Section III consists of notes of a few species taken in the County of Bristol at a locality separated from Somerset only by a short distance. These, therefore, are not Somerset records, but are indications that the insects could be found in that county.

I would have preferred to use the nomenclature and classification of Heslop's Revised Check-List of British Lepidoptera (1964), a work which itself emanates from Somerset. However, Turner employs Kloet & Hincks's A Check-List of British Insects (1945), and, as my notes are intended to be read in conjunction with Turner's list, I have deemed it better to follow the same systematisation. But to assist readers who use Heslop, I have appended his reference number to each species, and, where

applicable, the name he uses. Hence current names will sometimes appear as synonyms in my notes.

After each species I have quoted Turner's general statement of its status in the county, sometimes slightly abbreviating it by omitting the name of the foodplant or description of habitat. Of the localities he gives, I quote only those for which I have fresh information—possibly only one out of a number—and anyone wishing to form a comprehensive picture of the status of the insect in the county must consult the original list; my purpose is to supplement, not to supersede. It follows that there will be no place name in my quotation from Turner when I am introducing a new locality. I have omitted the initials of Turner's recorders, but when the Victoria County History is his authority, I have said so: records of so long ago need verification or adjustment.

All my specimens were netted or bred: I have never used light. Furthermore, the dates I give for localities other than Abbots Leigh, keep repeating themselves; in the last five years I have made only five visits to Goblin Coombe, eight to Shapwick and four to Berrow. If so much can be learnt about so many supposedly rare species in so few expeditions (pace Churchill), it is clear that Somerset offers immense possibilities for entomological discovery.

I. Species not included in Turner's list

Eriocrania sangi Wood (2301). Abbots Leigh, one, 6.v.1963

Eilema deplana Esp. (178). Goblin Coombe (Cleeve), three larvae feeding on lichens growing on yew; from these I bred one moth on 16.vi.1960.

Eupithecia trisignaria H.S. (856). Compton Martin. I found five larvae on *Heracleum* in September, 1959, but failed to rear the moths. I revisited the locality in 1961, when I found about eight larvae, from which I bred three moths the following summer. The fact that I have also found larvae at Coombe Dingle in the city of Bristol suggests a wider distribution, but I failed to turn it up in Leigh Woods in spite of prolonged search each year.

Ortholitha umbrifera Prout (—). Quantocks, where I took five specimens on 28.v.1958. A month later I revisited the locality and found *O. mucronata* Scop. (816) in abundance. Though the earlier moths are different in appearance, it is possible that they are not specifically distinct. (Ref. Tams, W. H. T., 1941. "Some British Moths Reviewed", Journ. Amat Ent. Soc., Vol. 38: 25-26.)

Mniophaga mundella Dougl. (1627). Berrow, one, 6.v.1963. No significance should be attached to the fact that I only took one specimen; small Gelechids abound on the sand-dunes and it is difficult to be selective.

Lita longicornis Curt. (1642). Shapwick, one, 23.vii.1961. I failed to find it on subsequent visits.

Coleophora flavipennella Dup. (1992). Abbots Leigh, one, 19.vii.1964. I am grateful to Mr. R. W. J. Uffen for determining this specimen.

Coleophora taeniipennella H.-S. (2063). Berrow, three, flying among *Juncus articulatus* in a damp hollow, 18.vii.1964.

Lithocolletis cerasicolella H.-S. (2082). Abbots Leigh, where it is well established on cherry. I first took the larvae in October, 1963.

Lithocolletis corylifoliella Haw. (2101). This common species was probably accidentally omitted from Turner's list. I have bred a short series from mines in the leaves of whitebeam collected at Goblin Coombe (Cleeve) and have seen mines elsewhere on hawthorn.

Incurvaria masculella Schiff. (2277). Possibly also an accidental omission from Turner's list. Abbots Leigh, 22.v.1963.

Stigmella atricapitella Haw. (2316). Abbots Leigh, bred from oak, 1964. Records for this species are probably included in Turner's list under *S. ruficapitella* Haw., which I have also bred from Leigh Woods.

Nepticula salicis Staint. (2357). Abbots Leigh, bred from sallow, v.1964. The larval mines are not rare on *Salix* in that locality.

Nepticula distinguenda Hein. (2375). Shapwick, common. I bred the moth in 1954 and 1965 from mines in birch collected the previous autumn.

Dechtria subbimaculella Haw. (2381). Abbots Leigh, Goblin Coombe, bred in 1964 from the previous year's mines in oak leaves. It appears to be fairly common in both localities.

II. Additional notes on species included in Turner's list

Eriocrania semipurpurella Steph. (2300). "Probably still occurs where birch is plentiful on the Turf Moors. Abbots Leigh . . . . (Victoria County History)".

Eriocrania rubroaurella Haw. (2304 *purpurella* Haw.). "Apparently very scarce at the present time . . . . Abbots Leigh . . . . (V.C.H.).

Mnemonica unimaculella Zett. (2307). "Probably still occurs on birch. Abbots Leigh . . . . (V.C.H.).

The Victoria County History records are still operative; the three species are common in Leigh Woods.

Cybosia mesomella L. (176). "Very scarce and local; it should occur freely on the Turf Moors, but records are few . . . . Shapwick . . . . ". I have taken it at Shapwick and bred a specimen from a larva taken on the Quantock Hills.

Comacla senex Hübn. (173). "Very scarce and local in marshy places; it probably still occurs on the Turf Moors . . . . Shapwick, 1920, 1933". It still occurs at Shapwick not uncommonly (1961-1964).

Coenobia rufa Haw. (427). "Generally in marshy places such as the Turf Moors; local and uncommon . . . . Shapwick . . . . ". In my experience it is common at Shapwick.

Pyrrhia umbra Hufn. (334). "Seems to have become much rarer that it was about 50 years ago. Recent records are few . . . . Berrow . . . .". Berrow, two, 14.vi.1961.

Procus versicolor Borkh. (464). "Uncommon, but confused in the past with *P. strigilis*". Berrow, 14.vi.1961.

Aporophila nigra Haw. (555 *lunula* Stroem). "Uncommon, but there are records from most parts of the county". Keynsham, one, ix.1952.

Tiliacea citrago L. (582). "Very local and uncommon; nearly all the records are from the north of the county . . . . Abbots Leigh". I found larvae commonly among the suckers at the base of limes in Leigh Woods, and bred a series.

Citrea lutea Stroem (584). "Very scarce and local; appears to have been much commoner formerly". Abbots Leigh, fairly common.

Eupsilia transversa Hufn. (571). "Apparently much less common than formerly . . . . ". Abbots Leigh, 1957.

Lithophane socia Hufn. (539). "Generally uncommon, but it is widespread . . . . Abbots Leigh . . . . ". Abbots Leigh, three, 1957.

Tholomiges (Hypenodes) turfosalis Wocke (659). "Very scarce and

local—mainly on the turf moors . . . . Shapwick, 1918, common 1920". It is now extremely abundant at Shapwick. I noted what appeared to be a partial second emergence on 23.ix.1964.

Schrankia taenialis Hübn. (657). "Very scarce and local: recent records are wanting . . . . Abbots Leigh (V.C.H.) . . . . Shapwick". Leigh Woods, several, vii.1961; Shapwick, one, 23.ix.1964.

Sterrha subsericeata Haw. (711). "Local and uncommon; probably overlooked". Goblin Coombe (Wrington), 1957.

Cosybia pendularia Clerck (683). Local and uncommon, mainly in the northern part of the county . . . . Shapwick, 1950". Shapwick, several, 2.v.1963.

Cosymbia trilinearia Borkh. (688 *linearia* Hübn.). "Very rare but it may have been overlooked". Abbots Leigh, one, 29.vi.1964.

Pseudoterpna pruinata Hufn. (671). "Generally uncommon and local". Quantocks, 28.vi.1958.

Eupithecia expallidata Doubl. (862). "Scarce and local . . . . Abbots Leigh (V.C.H.), scarce . . . .". Larvae are now not at all uncommon in Leigh Woods on golden rod. I have found them annually since 1960, and have bred a series.

Eupithecia absinthiata Clerck (860). "Seems to be unusually scarce in the county, but possibly overlooked". Larvae are plentiful in golden rod and a number of other foodplants in Leigh Woods.

Eupithecia valerianata Hübn. (852). "Scarce and local; mainly in the Turf Moors . . . . Shapwick, 1912". Larvae were common at Shapwick in 1961 (the only year I searched for them) and from them I bred a series in the following May and June.

Eupithecia lariciata Frey. (882). "There are few records of it but it is probably found in nearly all larch plantations". Goblin Coombe (Cleeve), in the larch plantation.

Eupithecia isogrammaria H.-S. (845 *haworthiata* Doubl.). "Scarce and local, and mainly in the northern parts . . . . Abbots Leigh". Larvae are common in Leigh Woods.

Eupithecia inturbata Hübn. (844). "Very local and uncommon". Abbots Leigh, one larva (not bred), 1957.

Catocalpe undulata L. (791). "Very scarce and local . . . . Shapwick, fairly common . . . . ". Shapwick, only once, 1963.

Mesoleuca albicillata L. (740). "Very rare and apparently confined to the northern part". Shapwick, one, 9.vi.1963.

Melanthia procellata Schiff. (759). "Uncommon and local in the limestone districts . . . . Abbots Leigh . . . . ". It is fairly common in Leigh Woods.

Discoloxia blomeri Curt. (836). "Scarce and local; practically confined to the northern part of the county . . . . Abbots Leigh . . . . ". It is still not rare in Leigh Woods, and occurs freely in Coombe Dingle, in the city of Bristol.

Oporinia autumnata Borkh. (824). "Seems to be local and uncommon". Abbots Leigh, not rare.

Semiothisa liturata Clerck (903). "Very scarce and local; much less frequent than formerly". I took several, including a specimen of ab. *nigrofulvata* Collins, in Goblin Coombe (Cleeve) on 17.vi.1961.

Ectropis (Aethalura) punctulata Schiff. (950). "Scarce and local; appears to be absent even in some large birch plantations . . . . Abbots Leigh . . . . ". I have taken it in Leigh Woods and can confirm that

it is scarce.

Cleora (Deileptenia) ribeata Clerck (940). "Now very scarce and local". Goblin Coombe (Cleeve), one bred, 10.vii.1960.

Bapta bimaculata F. (894). "Very scarce and local in the northern part of the county". Abbots Leigh, 1963.

Pseudopanthera macularia L. (927). "Becoming much scarcer than formerly and more local . . . . Abbots Leigh . . . . ". Still to be found sparingly in Leigh Woods and commonly at Goblin Coombe (Wrington).

Crocota (Aspitates) ochrearia Rossi (968). "Very rare and local: probably still occurs in the coastal sand-dunes . . . . Berrow . . . . ". Berrow, 12.v.1961.

Cepphis advenaria Hübn. (926). "Very scarce and local . . . . Abbots Leigh . . . . ". Abbots Leigh, once.

Asphalia dilutata Schiff. (131). "Very local and generally uncommon . . . . Abbots Leigh, scarce . . . . ". Leigh Woods.

Euphydryas aurinia Rott. (49). "Very local . . . . ". Abbots Leigh. 1957 only.

Strymonidia w-album Knock (54). "Generally uncommon, but there are records from all parts . . . . Abbots Leigh . . . . ". Leigh Woods, fairly common, especially in the larval stage: Easton-in-Gordano.

Salebria betulae Deg. (1073). "Very scarce and local in birch plantations . . . . Shapwick . . . . ". Shapwick, one, 13.vii.1964.

Homoeosoma sinuella Fab. (1086). "A local species found on coastal sand-hills". Berrow, one, 22.vi.1961.

Catoptria (Crambus) pinellus L. (1136). "Local and uncommon". Abbots Leigh, one, 14.ix.1962.

Perinephela lancealis Schiff. (1025). "Very scarce and local". Abbots Leigh, one, 29.vi.1964.

Pyrausta nigrata Scop. (1003). "Very scarce and local . . . . on limestone hills". Goblin Coombe (Wrington), two, 5.vi.1963.

Pyrausta aurata Scop. (1007). "Widespread but always rather scarce". Abbots Leigh, scarce; Goblin Coombe (Wrington), common; Axminster.

Mecyna asinalis Hübn. (1029). "Very local, but common enough in a few places . . . . ". Abbots Leigh, common, 1961.

Scoparia truncicolella Stt. (988). "Local and uncommon". Goblin Coombe (Cleeve), 1961.

Endotricha flammealis Schiff. (1043). "Very scarce and local, generally in marshy places . . . . Shapwick . . . . ". I noted it sparingly in Leigh Woods and commonly at Shapwick in 1961.

Platyptilia pallidactyla Haw (1178). "Probably occurs in many places where yarrow is common, but there are few records". Berrow, one, 18.vii.1964.

Alucita tridactyla L. (1181 *Pterophorus tetradactylus* L.). Local and uncommon on hillsides . . . . ". Shipham, several, 13.vii.1964.

Oidaematophorus osteodactylus Zell. (1189). " . . . . reported from the northern part many years ago. Abbots Leigh (V.C.H.) . . . . ". It is common, both in the larval and imaginal stage, in Leigh Woods.

Oidaematophorus tephradactylus Hübn. (1191). "Very rare in the northern part . . . . Abbots Leigh (V.C.H.) . . . . ". Leigh Woods, one, 29.vi.1964.

Procris geryon Hübn. (222). "Very local but occurs in a few places on hillsides in the northern part". Goblin Coombe (Wrington), two, 2.vi.1957.

Epagoge (*Capua*) *vulgana* Fröl. (1275). "Very scarce and local and mainly in the northern part". Abbots Leigh and Goblin Coombe (Cleeve), common, 1963.

Tortrix (*Amelia*) *viburnana* Schiff. (1262). "Local and uncommon amongst bilberry and heather . . . . Shapwick . . . . ". Shapwick, two 23.vii.1961.

Cnephasia longana Haw. (1284). "Uncommon and mainly in the northern part". Berrow, abundant, 1964.

Peronea (*Acleria*) *aspersana* Hübn. (1314). "Generally uncommon, but it is widespread . . . . Shapwick, common . . . . ". Locality and frequency confirmed.

Peronea ferrugana Schiff. (1330 *Acleris tripunctana* Hübn.). . . . . rather uncommon . . . . Shapwick, 1933". Shapwick, one, 23.ix.1964.

Peronea fissurana Pierce (1329 *Acleris ferrugana* Schiff.). "Very rare . . . . Shapwick". Shapwick, a specimen probably referable to this species, 13.vii.1963.

Peronea (*Acleris*) *cristana* Schiff. (1323). "Very local, but common where it does occur . . . . ". Abbots Leigh, two, 14.ix.1962 and 8.xii.1964.

Peronea (*Acleria*) *literana* L. (1334). "Uncommon and local in woods and plantations". Quantocks, one, 11.ix.1952.

Evetria (*Rhyacionia*) *buoliana* Schiff. (1404). "Formerly reported as common in fir woods (V.C.H.), but there are no definite records. It may become common again in some of the new state forests." Goblin Coombe (Cleeve), in the Scotch fir plantation, common, 13.vii,1963.

Ancylis comptana Fröl. (1499). "Probably still occurs on limestone hills in the northern part, but very local". Goblin Coombe (Wrington), common, 1963.

Ancylis achatana Schiff. (1498). "Very rare". Shapwick, one, 26.vii.1961.

Notocelia uddmanniana L. (1445). "Generally rather uncommon except in the Taunton district . . . .". Abbots Leigh, common, 1964.

Eucosma aspidiscana Hübn. (1424). "Scarce and local . . . .". Goblin Coombe (Wrington), not rare, v.1963.

Eucosma fulvana Steph. (1421). "Very local and uncommon . . . .". Abbots Leigh, one, 19.vii.1964.

Argyroploce (*Olethreutes*) *rivulana* Scop. (1560). "Very scarce and local". Shapwick, one, 13.vii.1964.

Argyroploce (*Celyphoides*) *cespitana* Hübn. (1563). "Appears to have been fairly common many years ago, but now very scarce". Goblin Coombe (Wrington), one, 21.vii.1964; Shapwick, common, 13.vii.1964.

Hemimene (*Dichrorampha*) *plumbagana* Treits. (1340). "Very local". Berrow, common, vi.1963; it also occurs commonly on the Bristol bank of the Avon bordering on Somerset.

Pammene (*Strophedra*) *weirana* Dougl. (1398). "Local and uncommon". Abbots Leigh, bred, 2.vi.1964.

Enarmonia (*Laspeyresia*) *nigricana* Fab. (1352). "Appears to be very scarce in the county". Berrow, one, 6.vi.1963.

Xenolechia (*Telphusa*) *sequax* Haw. (1622). "Very local on limestone hills . . . . ". Goblin Coombe (Wrington), not rare, 21.vii.1964.

Briotropha (*Mniophaga*) *senectella* Zell. (1629). "Very rare". Berrow, one, 18.vii.1964.

Briotropha desertella Dougl. (1632). "Very local in coastal sand-dunes". Berrow, common, 1963-1964.

Sophronia semicostella Hübn. (1685). "Very rare". Goblin Coombe (Wrington), three, 21.vii.1964; I could have taken many.

Oegoconia quadripuncta Haw. (1712). "Very local . . . . ". Shapwick, one, 23.vii.1961. It also occurs in the city of Bristol.

Borkhausenia (Tubuliferola) flavifrontella Hübn. (1770). "Scarce". Goblin Coombe (Cleeve), one, 13.vii.1963.

Depressaria (Agonopterix) ciliella Stt. (1819). "Widespread but rather uncommon". Compton Martin, bred, 1961.

Aegeria andreniformis Lasp. (228). "Very rare and local in the northern part". Abbots Leigh, where old mines are conspicuous but not very numerous; I found two tenanted mines there in 1960, but did not breed the moths.

Sphecia bembeciformis Hübn. (224). "Local and uncommon". Abbots Leigh, where I have noticed the mines on sallow on a number of occasions, but I have not seen the moth.

Perittia oleae Haw. (1857). "Very scarce". Abbots Leigh, two, 1963.

Elachista atricomella Stt. (1869). "Must surely occur in many places, but records are lacking. "Goblin Coombe (Wrington), one, 26.v.1963.

Elachista subalbidella Schläg. (1898). "Very scarce and local. Shapwick, 1933". Shapwick, five taken out of a number seen, vi.1963.

Zelleria hepariella Stt. (1938). "Rather uncommon . . . . Abbots Leigh (V.C.H.), scarce . . . ." Now fairly common at Abbots Leigh, where it can be beaten from yew trees in the winter.

Swammerdamia heroldella Hübn. (1943). "Scarce and local . . . . Shapwick 1934 . . . .". I noted larvae, not uncommonly, on the birches at Shapwick in the autumn of 1963.

Coleophora viminetella Zell. (1989). "In marshy places on willow; apparently rare". Abbots Leigh on *Salix*, Shapwick on *Salix* and *Myrica*, common. I have bred the moth from both localities.

Coleophora glaucicolella J. H. Wood (2064). "Scarce and local". Abbots Leigh and Berrow; at both, the cases are relatively common, and I bred the moth from the latter locality in July 1963. Its close relative *C. caespititiella* Zell. (now known as *alticolella* Zell.) is also commoner than Turner suggests; it literally swarmed at Shapwick in early June 1963.

Lithocolletis heegeriella Zell. (2073). "Local and uncommon . . . .". Abbots Leigh and Goblin Coombe (Cleeve); fairly common in both localities.

Lithocolletis mespilella Hübn. (2085). "Doubtfully resident at the present time". Possibly occurs at Goblin Coombe (Cleeve) on whitebeam, mined leaves of which I have collected on two occasions. There appear to be three species, *L. corylifoliella* which I have bred from mines on the upperside (see Part I) and two making long and short mines on the underside. These I have failed to breed, but it is possible that the short mines are *mespilella*.

Lithocolletis lantanella Schrank (2089). "Reported many years ago in the limestone hills in the northern part". I have on several occasions observed the mines on *Viburnum lantana* both in Leigh Woods and at Goblin Coombe (Cleeve), but did not take them because I already have a series from another county.

Lithocolletis salicicolella Sirc. (2108). "Apparently very rare . . . . Abbots Leigh (V.C.H.)". It still occurs, not uncommonly, in Leigh Woods.

Lithocolletis ulmifoliella Hübn. (2092). "Reported as common in birch woods many years ago". Abbots Leigh and Shapwick, common in both localities.

Lithocolletis lautella Zell. (2095). "Very rare, but probably still occurs in some oak woods . . . . Abbots Leigh (V.C.H.). "It still occurs in Leigh Woods, and I have also bred it from Goblin Coombe (Cleeve).

Lithocolletis schreberella Fab. (2116). "Very rare; recent records are lacking, but should still be found on elms. "Abbots Leigh, three bred in iv.1964 from a small number of mined leaves (mostly containing *L. tristrigella* Haw.) collected the previous autumn.

Ornix (*Parornix*) *betulae* Stt. (2139). "Probably still occurs where birch is plentiful, but records are lacking. Abbots Leigh (V.C.H.), fairly common". This old record is still applicable.

Gracillaria (*Catoptilia*) *semifascia* Haw. (2152). "Rather scarce and local . . . .". Abbots Leigh, one, 28.ix.1963.

Cataplectica fulviguttella Zell. (2155). "Local and uncommon . . . . Abbots Leigh . . . ." Abbots Leigh (1964) and Compton Martin (1962), two specimens bred from each locality; larvae are plentiful at Compton Martin.

Argyresthis pruinella Clerck (1934 *ephippella* Fab.). "May still occur where cherries are grown but there are few records. Abbots Leigh (V.C.H.) . . . .". It is still fairly common in Leigh Woods, and also occurs in Bristol.

Lyonetia clerkella L. (2201). "Rather local and uncommon". Abbots Leigh, one, 7.xii.1964.

Adela rufimitrella Scop. (2294). "Scarce". Goblin Coombe (Cleeve), 26.v.1963.

Antispila pfeifferella Hübn. (1836). "Very local. Abbots Leigh (V.C.H.) . . . .". The larval mines were common in Leigh Woods in the summer of 1964.

Antispila treitschkiella F. v R. (1837). "Very scarce, doubtfully resident at the present time . . . . Abbots Leigh (V.C.H.) . . . .". It still occurs in Leigh Woods; I bred two moths in 1964/1965 from mines on *Cornus* collected in the autumn of 1963.

Stigmella fletcheri Tutt (2331 *rosella* Schrank, *anomalella* auct.). "Probably still occurs in rose gardens". Abbots Leigh, bred, iv.1964.

Stigmella (*Nepticula*) *marginicolella* Stt. (2373). "Probably still to be found among elms. Abbots Leigh (V.C.H.), fairly common". This old record for Leigh Woods is still valid; I bred a short series in May 1964 from the previous autumn's larvae.

Stigmella (*Nepticula*) *plagicolella* Stt. (2377). "Very scarce on blackthorn". I noticed a number of larval mines at Shapwick in 1964, but did not attempt to breed the moth.

III. Species taken in the county of Bristol and possibly occurring in north Somerset

The following species were taken in the parish of Conham in the county of Bristol near the spot where the three counties of Gloucestershire, Somerset and Bristol meet. The locality consists of rough, precipitous waste ground on the north bank of the River Avon, where the food plants of the species concerned grow plentifully. Somerset lies across the river a little upstream, but as the country there is open meadowland,

the food plants may be absent in the immediate vicinity. Some of these moths were surreptitiously pillboxed while I was coaching the University of Bristol crew!

Platyptilia ochrodactyla Schiff. (1177). The only record for Somerset is of its occasional occurrence at Portishead, on the authority of the Victoria County History. Though I have only taken one specimen at Conham (on 15.vii.1964), tansy is abundant there, and the moth is probably established.

Phalonia (Cochlidia) rupicola Curt. (1233). According to Turner, scarce and local, and recorded by the Victoria County History as occurring at Abbots Leigh and Brislington; the latter is about a mile from the Conham locality, and also in the county of Bristol. The moth is quite common at Conham, and probably still occurs in Leigh Woods, where hemp agrimony proliferates.

Lobesia reliquana Hübn.(1520). Not rare at Conham. Turner describes it as scarce in Somerset and gives a V.C.H. record for Abbots Leigh.

Hemimene (Dicrorampha) alpinana Treits. (1337) and *H. flavidorsana* Knaggs (1338). Turner's single record is from the south of the county; though under the heading of *flavidorsana*, it probably refers to *alpinana* as chrysanthemum is given as the food plant. *Flavidorsana* is abundant amongst the tansy at Conham. I have two specimens, both in worn condition, taken on 20.vi.1964, that is a fortnight or more before the general emergence of *flavidorsana;* there is a probability, therefore, that they are *alpinana.*

Hemimene senectana Guen. (1341). "Was reported as common over a hundred years ago; now probably extinct. Brislington, 1851". It is still abundant at Conham. But as neither Brislington nor Conham is in Somerset, the moth has no claim to remain in the Somerset list in default of other records.

Turner prints but rejects old records for *H. tanaceti* Stt. (1347 D. montanana Dup). It was recorded from Keynsham (the adjacent parish of Somerset) and Portishead. I have a Conham specimen which may be referable to this species. In a locality where *petiverella, flavidorsana, plumbagana, senectana, sequana* and *plumbana* all abound, it is impossible to be selective in one's captures and others of the genus may well be present.

Lithocolletis scopariella Zell. (2106). "Very rare on broom, Keynsham (V.C.H.)". Turner's only record. The moth is fairly common at Conham, and if a locality where broom occurs still exists in Keynsham, I would expect to find it there also.

Leucoptera spartifoliella Hübn. (2194). "Very scarce among broom. Brislington (V.C.H.), common". The moth is common at Conham, commoner than *L. scopariella.* However, since neither of these localities is in Somerset, this species, like *M. senectana,* has not yet been recorded from that county.

Ants in South Brittany

By K. E. J. Barrett

A family holiday spent on the south coast of Brittany during late July-August 1966, at Raguenès-Plage, near Pont-Aven provided some opportunity for a rather cursory examination of the local ant fauna. The bulk

of the localities visited were in a coastal area bounded by the road from Concarneau, through Pont-Aven and Quimperlé, to Lorient but a number of places outside this area were also looked at including woodland near Rennes, Josselin and Baud and upland areas (rising to some 300 metres) in the Forêt de Quénécan and the Montagnes Noires.

Myrmica species were rather sparse and only four species (*rubra, ruginodis, scabrinodis, sabuleti*) were obtained. Colonies of *Aphaenogaster subterranea* Latr. containing winged sexes were present under deep stones in a bank in shady woodland near the bridge over the River Laïta at St. Maurice. A *Myrmecina graminicola* Latr. nest with winged sexes was also present in the bank and a single worker of this species was taken in moss in a wood near Moëlan-sur-Mer. *Solenopsis fugax* Latr. occurred abundantly under flakes of rock along the low cliffs at Raguenès-Plage but was not found further inland. It was associated with a number of *Lasius* species and also *Tapinoma erraticum* Latr. No winged sexes were present in any of the many nests examined. Only a single species of *Leptothorax* was found. Workers of *L. unifasciatus* Latr., with prominently dark-banded gasters, were present on mossy banks at le Hénant and near Névez. *Tetramorium caespitum* L. was particularly abundant and occurred in 23 of the 27 localities examined. Donisthorpe (1927) has described the harvesting habits of this species but I had not previously observed this in Southern England. In a disused quarry near Moëlan-sur-Mer where *T. caespitum* occurred under stones, plant seeds were present in various compartments of the nest, each type of seed being heaped separately.

Tapinoma erraticum Latr. was plentiful in many localities. *Plagiolepis vindobonensis* Lomnicki nested in cracks of rock in the low cliffs at Raguenès-Plage. The small, active, dark-brown workers were attending minute yellow aphids on blades of grass. Winged males and a deälated female were present in one nest which also contained many yellow, callow workers. The workers can be separated from the similar mediterranean species, *P. pygmaea* Latr. by the longer initial antennal segments (Stitz 1939).

P. vindobonensis has been found in Belgium (Van Boven 1947) but records for N. France (Bondroit 1918, Cavro 1950) refer to *P. pygmaea*. It may be that these are actually the former species.

Winged females of *Lasius fuliginosus* Latr. were running on the sands at Raguenès-Plage on the 23rd of July and a deälated female was wandering in the Forêt de Carnoët a few days later. The species was also present in woodland at Moëlan-sur-Mer, Clohars-Carnoët and St. Maurice. *L. niger* L. was the most abundant species and occurred in every locality examined. *L. alienus* Först. was present in dry turf on the cliff-tops at le Pouldu and also inland at Plouay and Trégunc amongst dry heather. The active, reddish *L. emarginatus* Olivier occurred plentifully in dry stone walls and in a tree stump at Moëlan-sur-Mer where winged sexes were present, at Plouay amongst heather and at Clohars-Carnoët where it shared a large flat stone with a *Formica fusca* L. colony. Workers were also seen running at the base of the cliffs at Raguenès-Plage and at Port Manech. A colony of what is presumably this species was exposed under a deep stone in damp woodland at the Bridge of St. Maurice. The small, timid, yellowish-brown workers had only comparatively few, short decumbent hairs on the scapes and tibiae. *L. flavus* Fab. occurred in only a few localities.

Colonies of *Formica pratensis* Retz. occurred sporadically along the

open cliff-tops amongst heather from Trévignon to beyond Raguenès-Plage and usually singly in a number of inland localities. Single nests of *F. rufa* L. were present in woodland at Moëlan-sur-Mer and at the Bridge of St. Maurice. *F. sanguinea* Latr., *F. fusca* L. and *F. cunicularia* Latr. were generally distributed but *F. rufibarbis* Fab. was only found on the cliff-top at Raguenès-Plage.

A nest of *Camponotus ligniperdus* Latr. was found under a large stone on a heather bank at the edge of a small field to the south of the Forêt de Carnoët. Major and minor workers and a deälated female were present in separate cells under the stone. Extensive tunnels, resembling mouse-holes in size, penetrated deeply into the bank. The stone was also shared with *Formica fusca* and *Myrmica sabuleti*. *C. ligniperdus* was also present under a large boulder in a disused stone-quarry near Moëlan-sur-Mer and in a tall heather-covered bank bordering the Forêt de Camors, near Baud. A solitary deälated female was present under a small stone at the edge of the Forêt de Lanvaux, near Grand-Champ. This female was later amicably accepted by workers taken from the first two sites in an artificial nest. André (1881) has noted that *C. ligniperdus* is more often found nesting under stones and in the earth in contrast to the closely related upland species, *C. herculeanus* L. which prefers dead wood as a nesting site. On no occasion were any workers of *C. ligniperdus* seen above ground or away from the nest in Brittany although the weather was hot and sunny. When the nests were exposed the large workers showed little pugnacity and rapidly disappeared within the depths of the nest.

TABLE 1. Number of localities in which species occurred in South Brittany.

	Ile et Vilaine	*Côtes du Nord*	*Morbihan*	*Finistère*
No. localities visited	1	3	10	13
Species recorded				
M. rubra			3	2
M. ruginodis		1	2	5
M. scabrinodis		2	3	7
M. sabuleti			3	2
A. subterannea			1	
S. fugax				1
M. graminicola			1	1
L. unifasciatus				2
T. caespitum	1	3	8	11
T. erraticum		2	2	6
P. vindobonensis				1
L. fuliginosus			1	4
L. niger	1	3	10	13
L. alienus			2	2
L. emarginatus			2	4
L. flavus	1	2		2
F. rufa			1	1
F. pratensis			1	6
F. sanguinea	1	2	6	2
F. fusca		2	2	7
F. cunicularia		1		7
F. rufibarbis				1
C. ligniperdus			2	2

The number of localities in which species were found in the present visit are listed in Table 1.

TABLE 2. Comparison of species which were found in Brittany with other Northern French localities.

	Nord	*Fontainebleau*	*Channel Islands*	*Brittany*
P. coarctata	×	×		
M. rubra	×	×		×
M. ruginodis	×	×	×	×
M. scabrinodis	×	×	×	×
M. sabuleti		×	×	×
M. schencki		×		
M. rugulosa	×			
S. westwoodii	×			
A. subterranea				×
S. fugax	×	×		×
M. graminicola	×	×		×
F. nitidulus	×			
L. acervorum		×		
L. nylanderi		×	×	
L. tuberum		×	×	
L. interruptus		×		
L. unifasciatus			×	×
T. caespitum	×	×	×	×
T. erraticum	×	×	×	×
T. nigerrimum			?	
H. quadripunctatus		×		
P. vindobonensis	?			×
L. fuliginosus	×	×	×	×
L. niger	×	×	×	×
L. alienus	×	×	×	×
L. brunneus	×	×		
L. emarginatus	×	×	×	×
L. umbratus	×	×		
L. mixtus	×			
L. flavus	×	×	×	×
F. rufa	×	×	×	×
F. pratensis	×	×	×	×
F. truncicola	×		×	
F. sanguinea	×	×		×
F. fusca	×	×	×	×
F. cunicularia	×	×		×
F. rufibarbis	×	×		×
C. ligniperdus	×	×		×

I have been unable to obtain detailed information on the species previously recorded from Brittany and their distribution. The species found during the present visit are, however, compared with species listed from other areas in N. France in Table 2. These are from the department

of Nord (Cavro 1950), Fontainebleau (Collingwood 1956), and the Channel Islands (Donisthorpe 1947).

I am grateful to Mr. C. A. Collingwood for assistance with the identification of some of the species previously unfamiliar to me.

REFERENCES

André, E. 1881. Species des Hyménoptères d'Europe et d'Algerie. II. Les Fourmis. Beaune.

Bondroit, J. 1918. The Ants of France and Belgium. *Ann. Soc. ent. France*, **87** : 1-174.

Cavro, E. 1950. Catalogue des Hyménoptères du Département du Nord. I. Aculéates. Suppl. au Bull. de la Soc. ent. du Nord de la France, No. 52.

Collingwood, C. A. 1956. Ant Hunting in France. *Entomologist*, **89** : 105.

Donisthorpe, H. 1927. British Ants. London.

Donisthorpe, H. 1947. The Formicidae of the Channel Islands. *Entomologist*, **80** : 180.

Stitz, H. 1939. Die Tierwelt Deutschlands, Pt. 37, 1. Formicidae. Jena.

Van Boven, J. 1947. Liste de détérmination des principles espèces de Fourmis Belges (Hym., Formicidae). *Bull. Ann. Soc. ent. Belg.*, **83** : 163-190.

129 Smiths Lane, Windsor, Berks.

8th November 1966.

Notes and Observations

OCCURRENCE OF APAMEA PABULATRICULA (CONNEXA), THE UNION RUSTIC.—Can any readers of the *Record* who live in Yorkshire, Lincolnshire or Nottinghamshire tell me if this moth was seen or taken in these counties in 1966? If not in 1966, was it seen during the previous ten years? Please do NOT give localities: I only want to know if this moth still occurs in those counties.—P. B. M. ALLAN, 4 Windhill, Bishop's Stortford, Herts.

ERIOGASTER LANESTRIS L. (THE SMALL EGGAR): A FINAL NOTE.—This year thirty-three cocoons remained from my 1962 brood. As nothing emerged during February, I decided on 2nd March to open them. Their contents were as follows: 3 very dried-up moths, 16 very hard, shapeless, unrecognisable objects, presumably the remains of larvae which had not pupated, and 14 pupae, of which 13 were shrunken and hard, one of them still retaining its original yellow colour, and one was a very large pupa, still flexible, that cannot long have been dead. My aim had been to obtain a fifth-year moth, and I regard this as a near miss.—H. SYMES, 52 Lowther Road, Bournemouth. 3.iii.1967.

PTILOPHORA PLUMIGERA SCHIFF. IN SUSSEX.—On the 12th of November 1966 I ran my mercury vapour trap on the downs a few miles south of Petworth. Between 6 and 7 p.m. *P. plumigera* appeared in large numbers. It was a warm, still night; the ideal conditions which are so hard to find at this time of year. I believe records of this species from that part of Sussex are scanty.—J. A. C. GREENWOOD, Woodcote, Horsell Park, Woking, Surrey.

A FURTHER RECORD OF TRISATELES EMORTUALIS SCHIFF.—I have received permission from Major The Hon. S. Stonor of Stonor Park, Henley-on-Thames, to publish an interesting record of *T. emortualis*. Richard South's "Moths of the British Isles" refers to the capture of a specimen in 1859

by the Rev. B. H. Binks of Stonor, Henley-on-Thames. Major Stonor tells me that the name is incorrectly recorded and should be the Rev. B. H. Burkes. I know of no published records of this moth between 1859 and its rediscovery in the last few years. Major Stonor now reports that in his copy of "South" his father, the present Lord Camoys, has noted "at Stonor by the Rev. J. F. Perry 1910". Major Stonor knew the Rev. Perry well and he was an experienced entomologist. This record is particularly interesting as it seems to be additional proof that the moth has not re-appeared after an interval of one hundred years, but has been in the area and not detected.—J. A. C. Greenwood, Woodcote, Horsell Park, Woking, Surrey.

Elachista eleochariella Stainton (Lep., Tineina) in Perthshire.—On 19th July 1966, I took a single male example of this tiny species as it was flying in the afternoon sunshine, at about 2000 ft. on the ascent to Ben Lawers. E. C. Pelham-Clinton, of the Royal Scottish Museum, Edinburgh, kindly determined it as *eleochariella* Stainton, and says this is the first record of the species from an inland Scottish locality.—J. M. Chalmers-Hunt, St. Teresa, Hardcourts Close, West Wickham, Kent. 15.iii.1967.

Butterflies in a Garden (1966).—I was much interested in Mr. A. A. Allen's notes on butterflies seen last year in his garden at Blackheath (*Ent. Rec.*, **79**: 61) and have been comparing his observations with those I made in my garden in central Bournemouth.

I envy him his holly blues (*Celastrina argiolus* L.) which I have not seen in my garden or anywhere in Bournemouth since 1961, and he recorded six other species which I did not see here last year. But I saw a great deal more of the Vanessids than he did. Of these, far and away the most plentiful was the red admiral (*V. atalanta* L.) which appeared on forty-eight days between 21st July and 5th November. I saw seven of them on 17th August and five on 12th October. Next came the small tortoiseshell (*Aglais urticae* L.), which appeared on twenty days between 21st July and 21st October, but only as a singleton, except for two on 21st July and 12th September. I agree with Mr. Allen that this species has become quite scarce.

Third came the peacock (*Nymphalis io* L.) with sixteen appearances between 7th August and 4th September, all singletons except two on 10th August. The painted lady (*Vanessa cardui* L.), for which 1966 was a very good year (it was abundant at Hod Hill on 19th August), appeared on fifteen days between 29th July and 19th October, always as a singleton.

Finally, the comma (*Polygonia c-album* L.) was represented by two specimens on 14th July. I was surprised not to see any in September. Like Mr. Allen, I have not seen many during the past decade, although it has not missed a year.

Of other butterflies, apart from the whites (*Pieris brassicae* L. and *P. rapae* L.) I caught sight of a blue flying across the garden on 15th August, which I think was the common blue (*Polyommatus icarus* Rott.) and saw one or two speckled woods (*Pararge egeria* L.) on 12th September and the next day or so.

On 24th August, I was pleased to see the dipteron, *Volucella zonaria* Poda, which had not visited my garden since 1961, although it had

appeared regularly in the previous six years.—H. SYMES, 52 Lowther Road, Bournemouth. 3.iii.1967.

A CURIOUS CONDUCT OF ALSOPHILA AESCULARIA SCHIFF.—On 23rd February I noticed a male *aescularia* on a paling that I pass every day. The next day it was in the same position, so I marked the particular paling with my knife. The moth continued in the same place until 4th March, on two occasions it shifted to a different angle and on one it moved up four inches, but otherwise it was apparently quiescent for 10 days. I raised its upper wings gently and it was not crippled; the weather throughout the time, though several times rather windy, was warm.—H. C. HUGGINS, 65 Eastwood Boulevard, Leigh-on-Sea, Essex.

VANESSA CARDUI L. IN CORNWALL.—Some reports of the early appearances of *Vanessa cardui* L. in Cornwall this year may well be due to hibernation, and therefore worth recording.

Two or three were seen at Pendower, S. Cornwall, on 26th February by Mr. R. Penhallurick, and another the same day at Portscatho nearby. On 5th March a faded specimen was seen by Dr. Allsop at Allet near Truro, and on 13th March Mrs. M. Sheldon saw a very battered one at Padstow on the north coast.

It has been a mild winter in Cornwall with only occasional, unsustained frosty spells.—Dr. F. H. N. SMITH, Turnstones, Perrancoombe, Perranporth, Cornwall. 22.iii.1967.

LATE MIGRANTS 1966.—A sudden burst of migrant activity was observed at Steeple Barton, Oxfordshire, in October 1966. The following were taken in my mercury vapour trap:—

20th October—A female *Heliothis armigera* Hübn. in perfect condition. This was one of the darkest specimens I have ever seen. It is possible, therefore, that, if it behaves in a similar way to *Heliothis peltigera* Schiff., it may have bred in the cooler temperatures of Britain.

21st October—One male *Acherontia atropos* L. and a large number of very pale *Agrotis ipsilon* Hufn. and *Peridroma porphyreá* Schiff.

22nd October—One *Nemophila noctuella* L., followed by two more the next night.—H. B. D. KETTLEWELL, Genetics Laboratory, Department of Zoology, Parks Road, Oxford. 28.ii.67.

LITHOPHANE LEAUTIERI BDV. IN SOMERSET.—At Shipham, Mendip, on 14th October 1966, I found a *Lithophane leautieri* Boisduval (Blair's pinion) outside my mercury vapour light trap. This species was first recorded in the county at Minehead in 1963 (*Proc. Somerset Arch and Natural History Society*, **108**: 181), but this appears to be the first occurrence in north Somerset. The identification has been confirmed at the British Museum (Natural History).—TREVOR SILCOCKS, Bryher, Kenmeade Close, Shipham, Somerset. 23.ii.1967.

Obituary

ROBIN MARCUS MERE

With the death of Robin Mere on 17th January after an illness lasting many months British entomologists have lost a lovable personality and a most generous friend.

Born in London on 21st February, 1909, he was educated at Westminster and Christ Church, Oxford. Although he had started collecting Lepidoptera at an early age by the time he left Oxford motor cars were his great interest and with characteristic enthusiasm this led to racing M.G.'s. Having qualified as a solicitor and married, motor-racing was dropped, but before his earlier hobby again took hold of him the war intervened. As a Lieutenant R.N.V.R. reaching the exceptional rank of Commander his war service took him to many waters from Norway to the tropics.

Making a fresh start after the war Robin Mere was soon taking part in the exciting wave of discovery of new British Lepidoptera made possible by the use of mercury-vapour light and in a short time built up a remarkably extensive collection to which regular trapping in his fine garden at Chiddingfold contributed a great deal. As soon as small portable generators came into use he started to use them to explore remote and inaccessible places and so began a series of great expeditions. the first to the top of Skiddaw in 1954 in a vain search for *Amathes alpicola*. The writer was lucky enough to join his assault on Braeriach in 1955 and the following May to accompany him on a tour of the North of Scotland in atrocious weather, with little entomological reward but no loss of enthusiasm. Then followed several expeditions to the Scilly Isles on which huge quantities of apparatus were taken; four mercury-vapour traps were run regularly on Tresco as well as portables and it was usual for all traps to be examined before the sun reached them, often needing a 5 a.m. start. The Burren of Clare was later tackled in similar energetic fashion. This was perhaps his favourite collecting ground, wild, exciting and owing to his inexhaustible energy always turning up something new. Most of the discoveries in the Burren were micros, in which he had been taking an increasing interest though he was never persuaded to set the smallest of them: but he was ever as keen in pursuit of the Coleophorids and Nepticulids which he would not keep for his own collection as in hunting the larger species. Such generosity was characteristic of him and there can be no one who collected with him and did not experience it. Many other high-powered expeditions there were—it is remarkable how they were fitted into the life of a busy and very successful solicitor. In 1960 he became one of the team of naturalists appointed to survey the gardens of Buckingham Palace: here was an unexplored locality which filled him with enthusiasm and it was not surprising that the list of Lepidoptera he helped to compile should be one of the most important results of the survey, though quite extraordinary that it should contain two species, *Earias biplaga* Walker and *Monochroa hornigi* (Staudinger), new to the British Isles. Other species captured by him for the first time in the British Isles included *Eupithecia egenaria* H.-S., *Hymenia recurvalis* (F.), *Perinephela perlucidalis* (Hübn), *Nephopteryx albicilla* (H.-S.), *Pterophorus icterodactylus* Mann and *Nothris congressariella* Bruand, and among his discoveries must also be mentioned his Irish subspecies *hibernica* of *Eupithecia intricata* Zett. and the finding of *Cocymbia puppillaria* (Hübn.) and *Crocidosema plebejana* (Zell.) as residents in the Scilly Isles. His publications are mostly to be found in the Entomologist's Gazette and reflect his infectious enthusiasm and good humour.

A member of the South London Entomological and Natural History Society from 1946, Robin Mere held the office of President in 1960 and from 1959 was a Trustee of the Society. From 1962 he was on the council of the Royal Entomological Society and for several years was a member of the Entomological Club. The bare facts of office-holding do not give an adequate account of his services so freely rendered to all who needed them. His generous support of a number of projects and help to many individuals will probably never be recorded: he was a friend to all and never had a hard word to say of anyone. Yet was combined a certain ruthlessness and contempt for inessentials: bureaucracy could provoke him to mishchief, as when he considered the request for "Occupation" on a certain form to be irrelevant and answered on one occasion "Spy" and on another "Professional poacher"—needless to say without adverse developments!

In one who was so keenly appreciative of the beauties of the natural world it was a shock to find colour-blindness. Yet to Robin Mere the bright tawny coloured larvae of *Malacosoma castrensis* harmonised perfectly with the rich green vegetation of the Thames saltings and the delicate green larvae of *Agrotis ripae* were the same colour as sand. His keen eyesight usually overcame this defect and coupled with his quick reactions gave him great skill in netting even the smallest species. The same attributes of course contributed to his driving skill: as his passenger a journey could be very fast and uncomfortable but was entirely safe. He lived at high speed. Letters were often dashed off at a great rate and signed 'Haste, R.', but their volume was enormous and their contents seldom other than well-stated fact or plans for the future.

The loss of such a man until recently so active and energetic is hard to bear and it is tragic that his plans for retirement from professional life and expansion of entomological activity were never fulfilled. His widow and son have the deepest sympathy of a great number of friends.

E. C. P.-C.

Current Literature

De Danske Malore (second edition) by Skat Hoffmeyer. 561 pp. + 25 coloured plates + 1 black and white. Aarhus University Press, 1966.

This book, in the Danish language, deals with the Geometridae of that country, and gives one the impression of being a combination of South and Tutt in its style. This remark does not imply any suggestion of plagiarism, but is intended to indicate that it combines the Scientific but popular approach of South with its excellent coloured plates, and the practical hints on collecting and breeding certain species which suggests the writings of Tutt.

Each Danish species is described under its scientific name with the useful addition of a reference to the coloured plates showing the imago and larva.

The descriptions of many species are embellished with half-tone illustrations of interesting varieties, in the text, and where necessary for the distinction of species, comparative drawings of genitalia or wing pattern details are added. The "pugs" are specially well treated in this way with 58 drawings of male and female genitalia details. They are also given

two versions of the plate, one in colour and the other in black and white to emphasize wing pattern irrespective of colour.

The coloured plates 1-19 show first class colour photography and finish; plate 20, showing addenda to the Danish moths (five outside the Geometridae) and some striking geometrid varieties is of somewhat poorer quality, but none the less, it conveys the author's message. Plates 21-25 illustrate the larvae in colour, and should be of great assistance to the field worker in identifying his finds. The last ten pages of the text deal with addenda to Danish records of moths of Macro families, including the Psychidae.

The book is excellently printed on good paper and is strongly bound, and should be a great asset to all interested in the palaearctic Geometridae.—S. N. A. J.

The Nigerian Butterflies by John Boorman and Patrick Roche. Part V. Nymphalidae. Ibadan University Press. 1959. 15/- in Nigeria; 19/- elsewhere.

This part is, of course, similar in style to the previous parts issued, and deals with the genera *Hamanumida, Aterica, Cyandra, Pseudoargynnis, Catuna, Pseudoneptis, Pseudoacraea, Neptis, Cyrestis, Asterope, Byblia, Mesoxanthe, Ariadne, Neptidopsis, Eurytela, Kallima, Hypolynas, Salamis, Catacroptera, Precis, Vanessula, Vanessa, Atanartia, Lachnoptera, Phalanta* and *Issoria.* 83 species are illustrated on the 47 plates by black and white photographs of set specimens, and each genus is introduced by a few general remarks if more than one species is concerned. The species, too, are in most cases followed by a few notes as to colour which, with the plates, should make identification reasonably easy for either the entomologist or the interested non-entomologist. For this reason, the language is simple, but scientific names are used and vernacular names are avoided, thus widening the interested circle.

In some cases where a genus has several species, a key splitting the genus into groups, gives the uninitiated reader an introduction to the use of keys.

The quarto size allows for a large type and the books are very well printed on glossy art paper, with paper covers, and the reasonable price should show a lead to some other such publications.

Part VI. Acreidae, by John Boorman (15/- Nigeria; 19/- elsewhere) covers the two genera Bematistes (10 spp.) and Acraea (30 spp.) all but one of which are illustrated in 26 black and white photographic plates.—S. N. A. J.

Keys to the Genera of the African Termites by G. C. Webb. Ibadan University Press, Nigeria. 36 pp. 7/6 inland; 12/6 elsewhere.

This part is adapted from *Revision der Termiten* Afrikas, Sjöstadt (1925) but includes keys for Termitidae and Rhinotermitidae, and brings Sjöstadt's nomenclature as regards genera up to date (1961). The work opens with a classified list of African termites according to Sjöstadt (1925) followed by genera recorded from Africa but not included in Sjöstadt's Revision (1925). The keys follow, based on the characteristics of the soldier caste, firstly dividing the African Isoptera into four families, *Halotermitidae,* Calotermitidae, Rhinotermitidae and Termitidae, and these families are divided into genera by four keys. Then follow 50 figures illustrating the characteristics mentioned for each genus, the first of which indicates the portions of the anatomy are indicated by the terms

used, so that one's conclusions may reasonably be verified. Finally there are 12 selected references to works on the termites. The quarto size is maintained, but a hard surfaced paper is used. The print is large, good, easy to read, and is in a paper cover, strong enough to last while the part is being used as a separate.—S. N. A. J.

Insects and Man in West Africa by J. C. Ene, Ph.D.(Lond.) 58 pp. + 6 blank pages for notes. 8vo., paper covers. Ibadan University Press. 5/- inland, 6/6 overseas.

This little booklet is very well worth anybody's time, and especially that of those concerned with the impact of insects on the life and economy of mankind, but, of course, as its title indicates, with its accent on Africa.

Naturally one cannot go into detail when treating such an immense subject in 52 pages of text, but the reader has, in his hand, a catalogue of interesting points for investigation and there is a bibliography with 49 entries, beside an alphabetical index.

After an introduction, there are six chapters, the first giving an account of the place of insects in the history of West Africa, particularly stressing how the "white man's grave" reputation was due to insect vectors of the troublesome diseases suffered by would-be colonists who failed to diagnose the real sources of these complaints and who killed off many of their patients with the fashionable bleeding, purging and blistering, all dehydrating processes.

Chapter 2 is headed Insects and Culture in West Africa and gives interesting tables showing the use of insects as food in West Africa, and another citing cases of entomophagy from all parts of the world, including our inclusion of cheese mites and maggots as a vital part of prime stilton. The silk industry is also mentioned, pointing regretfully at the unnecessary destruction of larvae as food when they could provide silk for an important industry. Chapter 3 deals with Insects and health and, of course, this speaks for itself as does the title of Chapter 4: Insects and the Exonomy of West Africa, and in Chapter 5, under the title of Insects and Man as Rivals in West Africa, gives amongst other things a welcome account of beneficial insects, both as pollinators and as predators on inimical species.

I have given some space to this small work because I think it has great prospects in getting "emergent" people to note and study perhaps one aspect of the question, which, in the end, is not what should they be given, but how can they best be taught how to help themselves.—S. N. A. J.

Gall midge genera of economic importance (Diptera: Cecidomyiidae) Part I: Introduction and subfamily Cecidomyiinae; supertribe Cecidomyiidi. By **K. M. Harris.** *Trans. R. ent. Soc. Lond.*, **118**: 313-358. £1 4/-, from the Society.

The author supplements the work of H. F. Barnes on this family of minute gall flies with this and projected papers. Although the methods of study that he describes are not those for which the amateur collector has the necessary facilities they show the thoroughness of the author's study. The beautiful drawing by Arthur Smith of a complete adult male *Contarinia nasturtii* (Kieffer) is supported by 198 figures by the author of larvae, and key characters of antennal segments, wings, legs, and genitalia of adults. Keys are given to the sub-families and supertribes together with descriptions of genera and of tribes (three being described as new).—L. P.

Links (F. T. Grant). Between Gravesend and Rochester (Madeson, *Entomologist*, **5**: 546). Cuxton (Chaney (1884-87)); 1893 (Tutt, *Ent. Rec.*, **4**: 275). Greenhithe, said to be abundant on the railway bank (Fenn, *Diary*, 1874); abundant, c. 1865 (Webb, *Ent. Rec.*, **7**: 15). Dartford*, common in clover field, 1900 (Sherrin and E. D. Morgan). Otford, June 20 (9), 22, 1913, June 9, 1914 (Gillett, *Diary*). Shoreham (G. V. Bull); locally common (S. F. P. Blyth); c. 1947 (D. F. Owen); (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1899: 109); (*Entomologist*, **33**: 47) Eynsford, c. 1947 (D. F. Owen). Fawkham; Pinden (E. J. Hare). Stone (G. Law).

6a. Near Darenth Wood (Stephens, *Haust.*, **3**: 113). Darenth Wood, 1858 (Thomas, *Ent. week, Int.*, **4**: 163); (L. T. Ford). Chattenden, taken 1895 and recorded by Battley at meeting of June 13, 1895, of North London nat. Hist. Soc. (*Ent. Rec.*, **7**: 22).

7. Sittingbourne; Faversham (H. C. Huggins). Below Kings Wood close to Whitehill (Scott (1950)). Westwell, common (E. Scott).

8. Folkestone, clover fields, June and August, not scarce (Knaggs (1870)). Dover, 1883 (Coverdale, *Entomologist*, **16**: 221). Deal Road. Dover, one, August 27, 1902 (H. D. Stockwell, *Diary*). Sole Street.—"It still persists in a sloping field near Sole Street which was once sown with lucerne" (Scott (1936)); one in F. A. Small coll., "Sole Street, June 14, 1935" (C.-H.). Ewell Minnis, one, June 20, 1938 (E. & Y. (1949)). Bridge locally not uncommon in two or three fields, c. 1946 (R. Gorer) Barham Downs, frequent; Babs Hill, Canterbury, one (c. 1947) (J. A. Parry).

9. Margate, 1868 (Cox. *Entomologist*, **4**: 130); very abundant (Cox, *Entomologist* **5**: 167); June, 1905 (Barrett, *Entomologist*, **38**: 214). Hengrove, Margate, two, June 10, 1919; June 21, 1915 (2); two, June 14, 1924; Lydden, Margate, two flying over lucerne August 12, 1923; Sarre one. June 5, 1922; Seamark, Monkton, two, August 5, 1922; Brooks End, two in lucerne field, August 11, 1922 (H. G. Gomm. *Diary*). Margate, 1913 (Spiller, *Entomologist*, **46**: 317); one, 1947 (E. H. Wild). Birchington, several in a field towards Brooks End, August, 1933 (C.-H.).

10. Sevenoaks* (Carrington, *Entomologist*, **13**: 78).

11. Yalding; Wateringbury (*V.C.H.* (1908)). Edenbridge, at light, 1933 (F. D. Greenwood). Aylesford (G. A. N. Davis).

12. Chartham (P. B. Wacher). Wye, one, 1954, one, 1956 (W. L. Rudland).

13. Ramslye, a few (Townsend, *teste* E. D. Morgan).

15. Dymchurch (Wakely, *Ent. Rec.*, **65**: 44).

16. Bonnington, June 8, 1922 (G. V Bull, *Diary*). Sandgate, three, 1961 (N. Reay-Jones).

VARIATION.—Vaughan (*Ent. mon. Mag.*, **4**: 91) records that at Northfleet (div. 6) in early June, 1867, he captured a ♂ ab.; this became the holotype of ab. *reducta* Cockayne (Cockayne, *Entomologist*, **63**: 164); which specimen is now in R.C.K. Also in R.C.K., is ab. *ochracea* Tutt, one, Eynsford.

FIRST RECORD, 1809: "Imago Jun. agris Cantii, at infrequens" (Haworth, *Lepidoptera Britannica*, **2**: 264).

Tathorhynchus exsiccata Led.: Levant Blackneck.

Immigrant.

11. Aylesford, ♂ taken in m.v. trap at Holt Wood, Aylesford, by G. A. N. Davis, in 1951 or 1952 (C.-H., *Ent. Gaz.*, **6**: 68; Davis, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1955: 23). The specimen is now in my coll.,

having been presented to me by the captor (C.-H.).

FIRST (PUBLISHED) RECORD, 1955: Chalmers-Hunt, *Ent. Gaz.*, **6**: 68.

Lygephila pastinum Treits.: Black-neck.

Resident, probably native. Marshes, meadows, chalk downs; on *Vicia* [*cracca*]. Rather uncertain in appearance; plentiful some years. Appears to have increased its range considerably during the past two decades.

1. Birch Wood (see *First Record*): (Curtis, *Br. Ent.*, 475); (Harding, *Entomologist*, **16**: 128). Brockley, larva (1898) by P. Richards (Barrett, *Br. Lep.*, **5**: 258). Farnborough* (H. Alderson, in *Wool Surv.* (1909)). West Wickham, one at m.v.l., July 16, 1951 (R. F. Birchenough); one, July 28, 1952 (E. E. J. Trundell). Orpington, 1957 (R. G. Chatelain). Bromley, one, July 15, 1964 (D. R. M. Long).

3. Church Wood, Blean, one, July 5, 1953 (W. D. Bowden, *Diary*).

4. Westbere, one, June 30, 1946; Ham Fen, one, June 17, 1950; Ebbsfleet, one, June 16, 1952 (C.-H.). Sandwich, "swarming in my headlights," July 3, 1933; at sugar, July 13, 1936 (A. J. L. Bowes); one, worn, July 28, 1951 (C.-H.); "quite common," 1957 (B. K. West); plentiful at light and sugar, July 2, 1948; June 25, 1949 (D. G. Marsh, *Diary*). Ickham, occasionally, 1954-59 (D. G. Marsh). Between Sandwich golf course and Deal, six to eight specimens disturbed on each visit, July 18, 1956, July 10, 1958 (P. Cue).

5. Biggin Hill, seven, at rest on *V. cracca*, July 16, 1955 (C.-H.).

6. Halling, many, July 17, 1907; a few, June 24, 1908 (Ovenden, *Ent. Rec.*, **19**: 213, **21**: 32). Gravesend (*V.C.H.* (1908)). Southill by Birling Downs, three mid-day July 16, 1916 (F. T. Grant). Eynsford, one, August 7, 1959 (R. G. Chatelain).

6a. Darenth Wood (see *First Record*); (Curtis, *loc. cit.*). Chattenden, July 13, 1875, one, June 21, 1884 (Fenn, *Lep. Data* MS.); not uncommon (Chaney (1884-87)); one bred from larva, taken by Mr. Lewcock, May 25, 1889 (*Young Nat.*, **10**: 173); odd ones, 1903-10 (H. C. Huggins); several, June 26, 1960, disturbed from amongst *V. cracca* (C.-H., *Proc. S. Lond. ent. nat. Hist. Soc.*, 1960: 85). Near Chattenden, 1905 (Ovenden, *Ent. Rec.*, **18**: 17). Higham, larvae common, full-fed on *Vicia* (Porritt, *Entomologist*, **13**: 163). Chattenden (*Entomologist*, **8**: 293; *Ent. Rec.*, **4**: 249).

7. Westwell, at valerian, June 24, 1945 (E. Scott); plentiful, 1946 (Bull, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1946-47: 168); common, 1962-63 (Scott (1964)). Walderslade, about 30, 1954 (G. A. N. Davis).

8. Folkestone Warren, scarce (Knaggs (1870)). Walmer, one, July 15, 1901, seven, July 5-7, ten, July 6-7, 1905 (H. D. Stockwell, *Diary*); 1906 (Shaw, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1907: 6). Cliffs towards St. Margaret's Bay, five at dusk (W. E. Busbridge). Kingsdown, on the cliffs (H. C. Huggins); July 1, 1925 (H. G. Gomm, *Diary*). St. Margaret's Bay (1947) (D. F. Owen). Deal, July 8, 1933, July 6, 1935 (J. H. B. Lowe). Dover Cliffs, July 9, 1932 (J. H. B. Lowe); "often common" (E. & Y. (1949)). Poulton, July 15, 1909 (P. A. Cardew, *Diary*). Haddling Wood, eleven at dusk, July 8, 1933, seven, July 9, 1934 (W. E. Busbridge, *Diary*). Elham, July 5 (6), 6 (2), 7 (1), 1934 (W. E. Busbridge, *Diary*). Betteshanger, July 6, 1957 (R. F. Bretherton). Brook (C. A. W. Duffield); one, 1959 (M. Enfield). Folkestone, 1950 (A. M. Swain). St. Margaret's-at-Cliffe, five at rest on *V. cracca*, July 4, 1964 (C.-H., *Proc. S. Lond. ent. nat. Hist. Soc.*, 1964: 35). Wye, June 9, 1920, two on Crown Hill (H. G. Gomm, *Diary*); a colony (Scott (1936)); one, July 14, 1956 (W. L. Rudland); one, 1957 (M. Singleton). Near

Bourne Park, Bridge, one, c. 1939 (J. A. Parry). Chilham, two (J. W. C. Hunt).

10. Sevenoaks (Gates, *Trans. Cy. Lond. ent. nat. Hist. Soc.*, 1891: 21).

12. Ashford, one in garden, July 20, 1956 (P. Cue). Willesborough, one, July 9, 1957 (W. L. Rudland); one in m.v. trap, July 1961 (M. Singleton).

13. Tunbridge Wells district (Cox, *Entomologist*, **4** (62): ii).

14. Tenterden, one by beating a hedge near Knock Wood, July (Beale, *Zoologist*, 4130) (Stainton, *Man.*, probably refers).

15. Greatstone, one, July 4, 1950 (F. A. Swain). Dungeness, about forty flushed in daytime near the Open Pits, July 4, 1950 (F. A. Swain); one, July 31, 1956 (P. Cue); one, July 15, 1964 (R. E. Scott).

16. Folkestone, one, 1951 (Morley, *Ent. Rec.*, **64**: 171); two or three annually since 1952 (A. M. Morley, *in litt.*, 5.xii.1958).

First Record, 1830: "Taken occasionally in the fields in the neighbourhood of Birch and Darenth Woods" (Stephens, *Haust.*, **3**: 126).

[(**L. craccae** Schiff.: Scarce Black-neck.

Almost certainly an error of determination.

7. Chatham district, 1891 (Tyrer, *Ent. Rec.*, **2**: 232); "? *T. pastinum*" (Tutt, *Ent. Rec.*, **2**: 232).)]

Colobochyla salicalis Schiff.: Lesser Belle.

Native. Woods; on aspen. Apparently now restricted to div. 12.

This is one of our country's most local moths, and though it may yet exist in the Haslemere-Petersfield area (Hampshire-Sussex border), Kent is now the only county in which it is known still to survive. Unfortunately, it is also one of those species that is in grave danger of extermination, not from the hands of the collector, but from the planting of conifers and consequent destruction of the habitat. The chosen habitat is a woodland clearing containing a high proportion of aspen, upon the youngest leaves and extreme shoots of which, especially those growing on suckers, the larva thrives.

1. Charlton (see *First Record*). Bexley, "I have specimens taken many years since in the neighbourhood of Bexley, in which vicinity I believe my friend Mr. Newman has captured it within these few years" (1834, Stephens, *Haust.*, **4**: 19). West Wickham Wood, one taken [1851] (Douglas, *Zoologist*, 3183). Birch Wood, rare (Douglas, *Zoologist*, 3246). Shooters Hill Wood, one, June 11, 1859 (Jones, *Ent. week. Int.*, **6**: 155). [Dulwich, one on a lamp, 1858 (Barrett, *Ent. mon. Mag.*, **3**: 43; idem, *Br. Lep.*, **6**: 285), is probably Surrey.]

10. Near Sevenoaks*, taken for several years between 1862 and 1868 (Barrett, *Br. Lep.*, **6**: 286).

12. Ham Street (Orlestone Woods).—♀ taken by C. G. M. de Worms, June 12, 1932 (de Worms, *Entomologist*, **65**: 229). Since then, the moth has been noted regularly in these woods in varying numbers, but so far as I am aware only in the Orlestone group. Up to 1939, the numbers had been small, but in that year, according to A. J. L. Bowes, nearly 40 moths were taken. The majority of Ham Street *salicalis* had been noted at light until 1948, when, however, a fair number was walked up by day from among 1-2 year-old aspens growing in a clearing in Birchett Wood. In May 1951, the moth was abnormally plentiful; thus, G. Haggett (*in litt.*) says that, in Long Rope one morning during hot, still, sunny weather, he

was "continually flushing it for three hours over an area of 10-15 acres, but only plentifully from amongst the young, coarse, hairy aspen". Other records are:—June 30, July 3, 1935, June 15, 1939, June 18, 1950 (R. C. Edwards); May 26, 1954 (P. Cue); June 18, 1934 (2), "the second record"; June 30, 1935 (1), June 26, 1936 (4) (A. J. L. Bowes); June 18, 1936 (W. S. Gilles, *Diary*). I have noted it in Birchett, Burnt Oak, Faggs, Long Rope Woods, and my recorded dates are: June 11, July 2, 1938, June 6 (5 ♂♂, 1 ♀), 17, 1939, June 13, 1947, June 7, 8 (3 ♂♂, one of which very worn), 11, 1948, June 1, 1950, July 25, 1951 (very worn ♂), June 21, 1952, June 5, 6, 1954, June 8, 1957, June 12, 1960, July 15, 1962 (2 ♂♂, including one in good condition) (C.-H.). In 1956, de Worms (*Entomologist*, **89**: 284) took a perfect specimen at m.v.l., on September 14, an abnormally late date, and probably representing a partial second emergence.

S. Wakely has repeatedly found the larva in nature, having taken single examples on aspen shoots on July 5, 9, 1952, July 9, 1958. For a good description of the life history in captivity, cf. Hedges, *Entomologist*, **83**: 97-98.

14. Knock Wood, Tenterden, one (1853) (Beale, *Zoologist*, 4130).

First Record, 1809: "The present, is one of those remarkable species that were formerly taken in considerable plenty, and that for the last twenty years have hardly been found in England; no specimen of it occured (*sic*) to any collector within our knowledge, for the last thirty years, till Mr. Neale took one at Charlton, about two years since; and the late remarkable fine season, which has afforded nearly a dozen more" (Haworth, *Lepidoptera Britannica*, 370).

Rivula sericealis Scop.: Straw Dot.

Native. Marshes, wet places, damp woods and meadows; foodplant unknown.

1. Lee district, plentiful 1860-62; Erith, 1875, 1879; Bexley, 1885, 1887, 1891 (Fenn, *Lep. Data* MS.). S.E. London (Lee district), "once a swarming insect in every lane, now (1894) far from common" (Fenn, *Ent. Rec.*, **6**: 231). Bexley (L. T. Ford). Orpington, 1948 (L. W. Siggs). Petts Wood, 1950 (A. M. Swain). Abbey Wood, 1953 (A. J. Showler).

2. Greenhithe* (*V.C.H.* (1908)).

3. Den Grove, June 26 (2), 30 (1), 1940, June 13, 1941 (1) (C.-H.). Whitstable, one; Herne, one (P. F. Harris). Herne Bay district (D. G. Marsh).

4. Ham Fen, 1891 (Fenn, *Lep. Data* MS.); abundant, some worn, June 17, 1950, common, August 6, 1950 (C.-H.). Deal, 1892 (Fenn, *Lep. Data* MS.); June 22, 1935 (J. H. B. Lowe).

5. Halstead (R. E. E. Frampton MS.). Westerham (R. C. Edwards). Chelsfield, 1950 (A. M. Swain).

6. Clay Lane Wood (H. C. Huggins).

6a. Darenth Wood (Stainton, *Man.*); (E. J. Hare). Chattenden, 1875, 1888 (Fenn, *Lep. Data* MS.). [Chattenden] abundant (Porritt, *Entomologist*, **7**: 181). Mark Oak Wood* (Chaney (1884-87)).

7. Chatham* (Stainton, *Man.*). Wigmore Wood (Chaney, *loc. cit.*).

8. Folkestone Warren, common (Knaggs (1870)). Kingsdown (Shepherd, *Entomologist*, **17**: 136). Stowting; Brook (C. A. W. Duffield). Elham, one, July 6, 1934 (W. E. Busbridge, *Diary*). Dover (Gardiner, *Ent. Gaz.*, **10**: 9). Betteshanger, July 6, 1957 (R. F. Bretherton).

9. Margate (H. C. Huggins); one, August 19, 1932 (H. G. Gomm, *Diary*);

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION

(Founded by J. W. TUTT on 15th April 1890)

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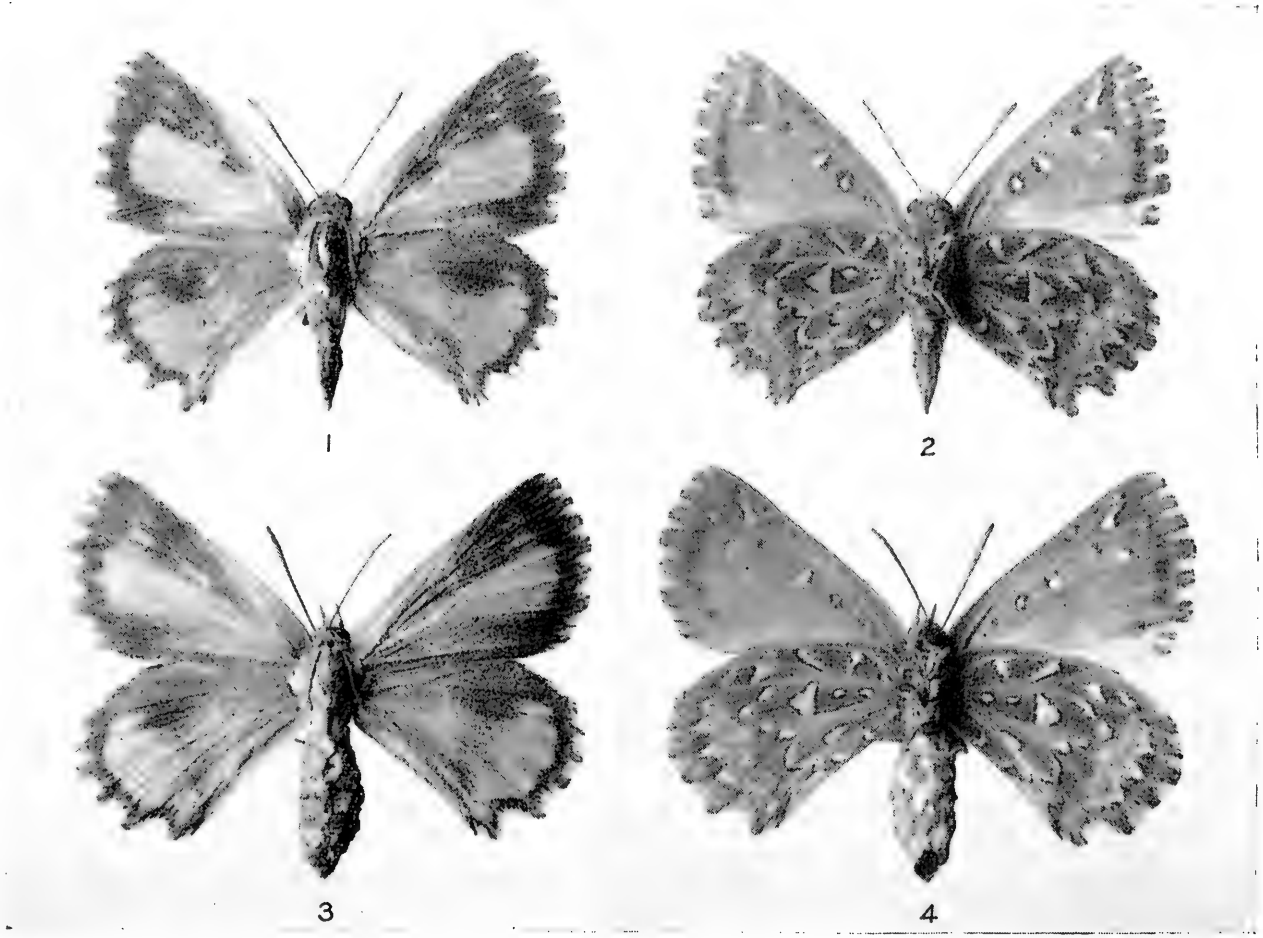

Phasis malagrida paarlensis subsp. nov.

Fig. 1. ♂ Paratype (upperside), Paarl Mountain, 26.ii.1950. Fig. 2. ♂ Paratype (underside).
Fig. 3. ♀ Paratype (upperside), Paarl Mountain, 26.ii.1950. Fig. 4. ♀ Paratype (underside).

Figures approximately 1·8 times natural size.

Photo: *H. N. Wykeham.*

Observations on the Cape Lycaenid *Phasis malagrida* (Wallengren)*, with the description of a new race

By C. G. C. Dickson

After being well known to Trimen and presumably a few of the rather later Cape collectors, including Lightfoot, this distinctive species, with its beautifully marked underside, seems to have been "lost" for a considerable period. Over thirty years ago a determined effort was made to rediscover it in the area above Cape Town from which it had originally been recorded and this eventually met with success when, on 2nd February 1935, a fine male specimen was found on Lion's Head, followed soon by other specimens in reasonable numbers but restricted to a very limited extent of ground.

In March 1937, the butterfly was again located in the Cape Peninsula, at Llandudno, and in considerable numbers. The area concerned was subsequently chosen as the site for a battery and although *Ph. malagrida* continued for some years to maintain its hold on this piece of the mountainside, it is now many years since specimens were last seen there and no other locality has, up to the present, been found for it in this portion of the Peninsula.

When the author was collecting on the Paarl Mountain on 15th March 1938, another race of this butterfly was encountered on ground covered with short vegetation resembling that of the Cape Peninsula localities which have been mentioned; while, on 31st December 1956, a few examples of the same race were met with on one of the higher portions of the Paarde Berg, some 10 miles N.N.W. of the Paarl Berg.**

Phasis malagrida appears only in the second half of the summer, up to early autumn, and is believed to be single-brooded with, however, a prolonged period of emergence. In the Cape Peninsula, it has been noticed from 2nd February to as late as 20th April, when only very few specimens have still been on the wing. In common with various other Lycaenids, this butterfly is much attracted to the pink flowers of a common *Mesembrianthemum.*

The larva has refused to eat any of the plants on which eggs have been laid and it is thought that the larval life is spent underground in association with ants. The species is unaffected by veld fires provided these do not occur at the height of emergence.

Phasis malagrida paarlensis subsp. nov.

This race, at least as regards the male, is of a greater average size than *Ph. malagrida malagrida* from the Cape Peninsula and the orange areas of the upperside are considerably larger in all wings.

**Cygaritis malagrida* Wallengren, K. Sv. Vet. Akad. Handl., 1857, Rhop. Caffr., p. 43.

**Mr. Inge Persson of the Swedish Natural History Museum, Stockholm, has very kindly sent on loan to the writer the type specimen of *Cygaritis malagrida* Wallengren. It is a male specimen, in good condition, and indubitably represents the Cape Peninsula race of the butterfly.

Male. Upperside.

Forewing. Orange commences nearer base and, generally leaving relatively narrower brownish-black hind-marginal borders, is also of greater depth than in the nominate race while, inferiorly (though here more or less considerably suffused with dark scaling), it reaches part of the innermargin.

Hindwing. Orange begins much nearer base than in nominate race and consequently occupies a far greater field while, near the anterior angle of the wing, it tends to extend, on the whole, further upwards; the orange clear-cut and very largely devoid of dark scaling, and the veins not or at the most only slightly dark-scaled outwardly.

White spaces in cilia of both wings inclined to be a little narrower than in nominate race.

Underside.

Forewing. The oblique white streak with dark edging outwardly, near apex, generally noticeably less regular outwardly than in nominate race; submarginal dark line usually broader, and more broken up into separate markings between the veins. White spaces in the cilia and inward extension of the white colouring from these spaces rather less prominently developed on the whole than in nominate race.

Hindwing. The light markings which form an intricate pattern and have a metallic sheen, rather less whitish than in nominate race; the submarginal arrow-shaped markings usually somewhat better defined. Cilia with the light spaces rather less pronounced than in nominate race.

Length of forewing: 13·25-15·25 mm. (14·5 mm., in holotype).

Female. Upperside.

Forewing. Orange of about same extent as in nominate females in which it is most fully developed, but more clear of dark scaling than in the majority of such specimens, and its demarkation in relation to dark portions of the wing better defined.

Hindwing. Orange clearer and commencing nearer base than in nominate race, with the sub-basal portion which is partly obscured by darker scaling, itself beginning closer to the base than is usually the case in nominate females.

Underside.

Forewing. Features as noted for the male.

Hindwing. As in male, light markings rather less whitish than in nominate race.

One very small female (forewing, 13·5 mm.) is unusually dark on the upperside, for this race, while the hindwing underside has the finer markings less conspicuous than usual.

Length of forewing: 16-16·75 mm. in normally sized specimens available for study (16 mm., in allotype).

♂ Holotype, CAPE PROVINCE: Paarl Mountain, 22.iii.1956 (C. G. C. Dickson); British Museum Reg. No. Rh. 18548.

♀ Allotype, data as for holotype other than date of capture of 25.iii.1947; British Museum Reg. No. Rh. 18549.

Paratypes presented to British Museum (Natural History), CAPE PROVINCE: Paarde Berg, 31.xii.1956 (C.G.C.D.), 2 ♂♂; as allotype, 3 ♂♂.

Paratype in Coll. South African Museum, data as immediately above, 1 ♂.

Paratypes in author's collection, CAPE PROVINCE: Paarl Mountain, 22.iii.1956 (C.G.C.D.), 1 ♀; 26.ii.1950, (A. J. H. Duke), 7 ♂♂, 2 ♀♀.

In addition to Trimen's full description and valuable notes on *Ph. malagrida* in his "South African Butterflies", Vol. II, pp. 194-195 (1887), an excellent account of the habits, etc., of this very interesting butterfly is given by Swanepoel in "Butterflies of South Africa", pp. 125-126, Pl. VI, figs. 7, 8 (1953), the race figured being the Paarl one. The species is also described and figured in Murray's "South African Butterflies: A Monograph of the Family Lycaenidae", pp. 113-114, fig. 61 (1935). Incidentally, it would seem very doubtful if the Transvaal female specimen mentioned in Trimen's work represented an insect which, to-day, would be considered to be conspecific with *Ph. malagrida*.***

With regard to the name of the locality which has, in turn, been used for the new race, it may be mentioned that "Paarl" (pearl) is derived from one of the immense granite rocks on the mountain concerned, and not far from which the butterfly was first found.

Mr G. E. Tite has very kindly read through the manuscript of this article before its publication.

"Blencathra", Cambridge Avenue, St. Michael's Estate, Cape Town.

A fortnight in Connemara, 12th to 29th August 1966

By Captain J. ELLERTON, R.N.

We left by car for Bristol at 6.30 a.m. on Friday, 12th August; at the airport we had a delay of a couple of hours as the plane was late in leaving Dublin, but we were airborne soon after 1.0 p.m. and arrived at Cork some two hours later. We were soon on our way and arrived at our destination, a cottage on Killary Harbour, three miles outside Leenane, Co. Galway, by 8.0 p.m.—a very comfortable and easy way of travelling to Ireland, so easy and comfortable that I understand they are discontinuing this route next year so that we may appreciate the long trek and inconvenience of the boat ferry from Fishguard!

As this was essentially a family holiday no light trap or generator was taken—there wasn't room in the car, just a case of setting boards and a couple of nets.

The cottage is situated overlooking Killary Harbour on a hill above the Benown river, well surrounded by trees, masses of rhododendrons and, beyond, the enevitable acres of bog. By the Benown is a splendid old

***This specimen which answers to Trimen's description in all but size is in the collection of the British Museum (Natural History); it bears a hand-written label (in script and capitals) "Trans-Vaal. S. AFRICA.", and on the reverse the initals "D. A.". A second label gives the Trimen catalogue No. "p. 282 no. 6". Trimen gave the expanse of this insect as 2 inches, 7 lines, surely an error for a member of this group. The specimen actually measures 1 inch 7 lines. It is in fact a form of *Phasis wallengreni*, and very similar to certain examples of that species in the B.M. (N.H.) coming from Orangemouth, and Springbok in Namaqualand. This does suggest that Trimen's insect really came from the same area, and not from Transvaal at all. (G. E. T.)

wood on the hillside which rises some 300 feet up. Every form of tree seems to be there; oak, holm oak, birch, alder, ash, beech, sallow, ilex, rowan, hazel, hawthorn, Scots pine and others; all rather stunted probably because of the poor soil on the rocky hillside; an outcrop of moss covered rock everywhere. At the bottom of the wood by the stream you can still see traces of the hamlet which was there and disappeared, probably at the time of the famine, a sad reminder of old Ireland.

In the wood we took a nice series of *Epinota solandriana* L. ranging from those with chestnut forewings with a large white dorsal spot to those with cream forewings and a claret dorsal spot; *Chelaria conscriptella* Hübn. was plentiful as was *Zeiraphera insertana* F. On our last two days *Nycteola revayana* Scop. was just emerging and we took three lovely specimens of the grey form.

The woods round the cottage gave us a nice series of *Xanthorhoe designata* Hufn. in good condition and some well marked and varied *Acleris emargana* F. Here in North Bucks. *emargana*, which is not uncommon, is uniformly a dull brown and it was exciting to find the deep reddish browns and pale ochreous streaked with darker colours of the Irish race.

The surrounding bog was not very prolific for moths, plenty of *Bactra lanceolana* Hübn. and singletons of *Pseudoterpna pruinata* Hufn., *Selidosema brunnearia* Vill and *Nymphula nymphaeata* L. On the bog larvae of *Macrothylacia rubi* L. were abundant, you could easily pick up 50 in half an hour. An interesting point was that where there was one larvae, there was almost invariably another within a yard or so. Does the female *rubi* flit over the bog depositing two ova at a time I wonder; I think she must do.

Never before in an August holiday in Ireland have we had such lovely weather, only 1½ wet days in seventeen. The result was that on most afternoons we betook ourselves to a secluded sandy bay where my wife and children bathed. At the back of the beach behind the sand dunes stretched a grassy sward covered with wild flowers, I wish I was a good enough botanist to know them all. Here the Vanessids disported themselves and you could often see half a dozen *Nymphalis io* L. on the heads of Scabious within five yards of each other, several *Vanessa cardui* L. but only one or two *Vanessa atalanta* L. To our great joy *Colias croceus* Fourc. appeared and we must have seen a dozen or more specimens and were able to get what we wanted.

There was plenty of Salix Aurita on the plain and a number of larvae of *Acleris hastiana* L. were collected, these hatched out in October and a varied lot emerged, including one with cream forewings and a brown streak.

The low hills between the bay and the road provided a number of larvae, mostly on Myrica Gale, one enormous *Saturnia pavonia* L., one what I hope is *Apatele euphorbiae* Schiff., based on the description of the larvae in South which was the only book of reference I had with me, and several more who must remain anonymous until they emerge—if they do!

The micro *Udea ferrugalis* Hübn. was abundant and you could knock one out of any of the clumps of bushes on the hill side. There must have been a big migration in the summer as I imagine most of those I saw were bred locally.

On 18th August Hugh and I motored the 80 miles over to the Burren,

our first visit to that massive area. We only had torches and vainly hoped that it would be easy to spotlight *Calamia tridens* Hufn. as it climbed up grass stems! Needless to say we were sadly disillusioned, but nevertheless greatly enjoyed our trip. A pair of *Epirrhoe tristata* L. in cop were our best prize as we had not taken the moth before; the female duly laid eggs and they inconsiderately chose to hatch out on the day of our return. Whether it was the effect of the aeroplane flight or I gave them the wrong sort of Bedstraw, I suspect the latter, I failed to rear any of them, which was disappointing.

The following is a list of other lepidoptera which we saw or took. I am, as always, much indebted to Mr S. Wakely for all the trouble he has taken over identification and also to Mr M. Shaffer of the British Museum for determining the Pyrales.

Arenstola pygmina Haw.
Plusia gamma L.
Sterrha biselata Hufn.
Xanthorhoe ferrugata Clerck.
Xanthorhoe fluctuata L.
Colostygia didymata L.
Lygris testata L.
Euphyia bilineata L.
Dysstroma truncata Hufn.
Dysstroma citrata L.
Hydriomena furcata Thunb.
Ortholitha chenopodiata L.
Eudorea angustea Steph.
Eudorea mercurea Haw.
Scoparia ambigualis Treits.
Nomophila noctuella Schiff.
Udea lutealis Hübn.
Stenoptilia bipunctidactyla Scop.
Oidaematophorus tephradactylus Hübn.
Eupoecilia angustana Hübn.
Pandemis heparana Schiff.
Archips rosana L.
Amelia viburnana Schiff.
Philedone gerningana Schiff.
Eana osseana Scop.
Acleris rhombana Schiff.
Notocelia incarnatana Hübn.
Rhopobota naevana Haw.
Epinota caprana F.
Epinota brunnichana L.
Epinota trimaculana Don.
Epinota tenerana Schiff.
Epinota cruciana L.
Ancylis badiana Schiff.
Olethreutes lacunana Schiff.
Mniophaga senectella Zell.
Bryotropha terrella Schiff.
Scrobipalpa costella Westw.
Caryocolum marmoreum Haw.
Carcina quercana F.
Depressaria badiella Hübn.
Agonopterix costosa Haw.
Argyresthia pygmaeella Hübn.
Caloptilia populetorum Zell.
Caloptilia elongella L.
Ypsolophus radiatellus Don.

Granborough Lodge, Granborough, Bletchley, Bucks.

Variation in *Aphantopus hyperanthus* Linn.

By Major General G. C. Lipscomb, C.B., D.S.O.

The typical form of *A. hyperanthus* was first described by Linneus in the 2nd edition of Fauna Svecica 1761. It is described as having the upperside with some ocelli on the fore- and hindwings: the underside forewings with 3 ocelli and the hindwings with 5.

Since these long distant days many varieties of this common butterfly have been named but none seem to have caused the same confusion as abs. *arete, caeca, centrifera* and *obsoleta.* It is when one attempts to differentiate between them that one finds how unsatisfactory is the position. This article is an attempt to clear up the problem.

Frohawk, in his British Butterflies, describes ab. *Caeca* as a form

with very small white dots on the underside, while South, in Butterflies of the British Isles, states that 'specimens with a varying number of white dots, with or without yellow rings, are usually referred to as var. *arete*'. He goes on to state that the figure of a male shown on a plate accompanying the text, which has spots on the hindwings, but none on the forewings, is 'known as *caeca*'. Frohawk, apparently, has other ideas and states in his book that 'another type with the white dots encircled with yellow is known as ab. *arete* Müll'. Ford in his 'Butterflies' is equally wide of the mark. He agrees with neither of the above authors and, quoting Seitz as the authority, implies that ab. *caeca* ' . . . . must be reserved for those instances in which both rings and dots have vanished, the insect being immaculate'.

Having struggled unsuccessfully to sort out my own series of this butterfly from the above descriptions, I decided it was necessary to go back to the grass roots of the problem and wrote to Alan Collier for his assistance. He has shown me a paper by Mr. B. J. Lempke, written for Lambillionea in 1935, which goes some way towards clearing up the mystery. This paper states that ab. *arete* was first described by Müller in 1764 as having 2 eyeless spots on the underside of the forewing and 5 on the hindwing. For the sake of simplicity Lempke suggests that this variety should include all forms with white spots instead of all or the majority of ocelli. I am not entirely in agreement with this suggestion and would prefer *arete* to refer to those forms which have any number of spots on all wings. There should be a new name for all those which carry any sort of mixture of spots and ocelli.

Ab. *caeca* was first described by Fuchs in 1884 as having 'The white spots on the underside of the aberration *arete* completely missing on the forewings where ab. *caeca* is completely blind: on the hindwings some spots are indicated'. Again for the sake of simplicity Lempke suggests that ab. *caeca* should cover all forms where the spots are reduced to a few. Personally I prefer to stick to the original description by Fuchs as, at any rate in the British Isles, this is a very recognisable form.

The third variety, *centrifera*, was described by Seitz in 1909 as differing from *arete* because the yellow rings remain round the white spots—apparently the specimen figured by Seitz has the two top spots on the forewing underside normal, while the bottom spot on the hindwing underside lacks the black central ring. This variety can, therefore, be a mixture of normal ocelli and gold ringed white spots.

In discussing this form, Collier remarks in a letter to me that he would think that it must be difficult sometimes to distinguish between *arete* and *centrifera* as very few white spots are free from some gold scaling under a strong glass.

The last of these four varieties, *obsoleta*, first described by Tutt, has no spots at all on the underside and for this reason is quite straightforward.

It is of interest that Collier tells me that from the results of his various efforts at breeding from ab. *arete*, he thinks that all three aberrations, i.e. *arete*, *caeca* and *centrifera*, can occur in the same brood and that *arete* and *caeca* are simply a stage further from *centrifera* towards the very rare *obsoleta*.

Tutt actually called *centrifera arete* in 1896, which probably accounts for Frohawk's description of *arete* but Müller had of course already used *arete* in 1764. I have yet to hear of a female ab. *caeca* as all the examples

I have seen have been males. Ab. *arete* is certainly the commoner of the two in both sexes.

I conclude this paper with a word of thanks to Dr. Lempke for allowing me to quote so extensively from his own article and also to Alan Collier for his assistance and advice.

I hope what I have written will help other Collectors to sort out their *hyperanthus* troubles or, at any rate, provide a topic for discussion in the off season.

Season '66

By T. W. Harman

As mentioned at the end of last year's notes, this was to be a very different season from those previously because we were to move to Chesterfield to live. My wife and family moved with most of the household possessions in mid-February, while I moved to my parents, a few miles from Medmenham in order to complete my contract with Oxfordshire Education Committee. This meant that I had a chance to do a few last-minute entomological activities before leaving the area on 1st April. The first of these was a wish to see *Archiearis parthenias* L. on the wing. Mr. Brian Baker took me to Padworth on the 19th of March. This was one of the nicest days of the year, with unbroken sunshine, a joy to be in those surroundings on such a day. A great deal of time and energy was wasted, to begin with, by chasing the moths in between young birch trees. The best method was found to be a waiting game. By crouching behind a small birch with net at the ready, the moths came much closer and this resulted in a dozen specimens, many past their best. The next day I was out with Mr. L. Christie in the region of Wargrave-on-Thames. It was another lovely day and besides seeing some more *parthenias* around birches in the large beech-wood clearings, we saw one *Polygonia c-album* L. on a sallow bush. My last wish before leaving the Chilterns was to search for borings of *Aegeria andrenaeformis* Lasp. in the stems of wayfaring tree (*Viburnum lantana*) in a local valley. I chose a south-west facing slope where I had seen evidence of the moth previously and cut five likely-looking stems. One moth emerged on the 18th of June. Mr. Brian Elliot and myself cut many more stems in April from which we only bred a series of ichneumons, so my March effort was particularly lucky. So ended my permanent residence in Buckinghamshire.

The journey to Chesterfield was made on the 2nd of April and, by the 8th, Brian Elliott and I were on the local moors searching for larvae. Bilberry was a well-attended host plant, and larvae are easy to see on the buds until the leaves burst. The trap was tried in my back garden on 20th April. This is a very different garden from the one at Medmenham, a yard would be a better description, but there is a market garden at the rear. That night, there were no moths at all in the trap, a completely new experience to me, even on bad nights. Brian Elliott and I decided on a trip south at the week-end beginning Friday, 22nd April, home again after only three weeks' absence! This was to be a concentrated collecting trip, but turned out to be one of the worst week-ends weatherwise of the whole year. If it was not pouring with rain, the sky was clear and the temperature dropped below the "moth line". We

began at Medmenham by collecting black poplar catkins for larvae of *Cirrhia ocellaris* Borkh. We found plenty of catkins, but no larvae were forthcoming. This was probably because the catkins had been on the ground too long and had become very wet. They soon began to turn mouldy and smell despite efforts at drying them out. From here we moved to Pamber Forest for larvae of *Aegeria spheciformis* Schiff. This was more successful and we both got a few specimens through later plus a number of ichneumons. Towards evening we travelled to Padworth where the quarry was to be *Polia hepatica* Clerck. We awaited darkness in a local public house and then set out on what turned out to be a very tedious expedition because everything was soaking wet. Larvae were much rarer than in 1965, it took two and a half hours to find twenty on the young birches. In the process a female *Orthosia miniosa* Schiff. showed up with a few *Pachycnemia hippocastanaria* Hübn. We arose at 9 a.m. on Saturday and went up to the Chiltern scarp to beat Juniper. There were hundreds of larvae on it and a few *Eupithecia sobrinata* Hübn. resulted later after some breeding accidents to many of the larvae. A small micro hatched from the foodplant about half a dozen in all, as yet unidentified, but a nice surprise. We arranged to meet Mr. Alan Hepworth, a Somerset resident, for lunch at a point on the A4. We had a pint and a pork pie near by and then went to the Kennet marshes to hunt larvae of *Panaxia dominula* L. and *Plusia chryson* Esp. The feature of the afternoon was rain, but we were determined not to be put off. We found *dominula* larvae around the bases of comfrey plants very easily, probably just as good a method as waiting for sunshine as the larvae are less likely to have wandered even to a neighbouring plant. *Chryson* was a different story. The plants of hemp agrimony (*Eupatorium cannabium*) were so small that there was no chance of finding larvae. Finally the rain forced us to retire to a café in Newbury where Alan, who had no coat, began stripping and drying out his jacket in front of an electric fire kindly lent to us by a waitress. We planned to meet Brian Baker at Padworth in the evening, but things looked even more hopeless than the previous evening. However, Brian turned up as arranged and after a short conference we decided to hold a discussion on lepidoptera in the warmth of the local hostelry. From here we all went back to Reading with Brian Baker to continue the discussion, look at clearwings, and enjoy his usual excellent hospitality. So ended another day without a generator being used, in fact, both generators stayed in the boot for the whole week-end and two lights at my father's farm yielded very little. Sunday was our last day, but before returning to Chesterfield, we paid another visit to the Chiltern Scarp, but larvae did not seem so common as on the previous visit. This ended an expedition that would have been a complete failure, but for larvae. An excellent lesson for the future. April ended with the usual spring species in my trap here, not in great numbers, but enough to prove their existence.

The 1st of May brought better weather, so Brian and I went up to the local moor to look for larvae. I was very surprised to hear a grasshopper warbler singing amongst small Scotch pines. That evening I found 21 larvae of *Entephria caesiata* Schiff. all on bilberry. They produced a lovely series at the end of the month. Next day the temperature reached 76°F., but even this did not produce a rush of moths to the trap. Another larvae-hunting trip was made to Beeley Moor on the 20th of May and I

was most surprised to find *Callophrys rubi* L. adults sitting on the heather in a sheltered valley, a very different site from the one I was familiar with in the Chilterns. My brother and his family came to stay with us at Whitsun and we revisited the same valley for a picnic. It was a sunny day and *C. rubi* was flying commonly. Two larvae of *Lithomoia solidaginis* Hübn. were beaten from bilberry and they emerged in August. The first of many *Vanessa cardui* L. was seen near here on 29th May. On the 30th our two families piled into my brother's Land Rover and we went to Clumber Park. There is a wonderful selection of mature trees, rhododendrons and a number of rivers and lakes within this huge National Trust area. Birds were numerous, especially on the water, and even a pair of great crested grebes. While watching these we could hear three nightingales singing at the same time, my favourite of all songsters and one I had expected only in the south of England.

Brian Elliott and I decided we really ought to try for *Harpyia bicuspis* Borkh. before it was too late in the year, so on 4th June we set out for Cannock under instructions kindly given us by Mr. S. Coxey. We arrived in the area rather late, only to find the gate that let us have access to the trapping spot was locked. The man with a key to one of about ten padlocks on a huge chain around the gate could not be found so there was nothing for it but to climb over and cart the generator about half a mile down a track to quite a good-looking place near a river. After all this no *bicuspis* turned up; perhaps we were too late. The only insect of interest taken was *Gonodontis bidentata* Clerck ab. *nigra* Prout. The next night at Chesterfield was much better and I took my first ever *Unca triplasia* L. in the garden. Several turned up during the season, nice to see a species which appeared to be absent from my part of the Thames Valley. We again went to Beeley Moor on 8th June and saw a good number of *Hadena bombycina* Hufn. and *Eumichtis adusta* Esp.

Wood Walton Fen was visited on 11th June where we received all the help necessary from the Warden. What a pleasure it is to feel welcome in a place rather than tolerated. To begin with, conditions were excellent and brought out mosquitoes as vicious as I had seen in the tropics, landing proboscis first on any exposed parts. Later in the evening it rained so hard that we were forced under the bungalow. Among 50 species we saw only one *Arenostola extrema* Hübn. and a very late *Lycia hirtaria* Clerck. On the 19th of June we visited Lathkill Dale. It is only about half an hour's run from here so is convenient for a half day visit. This is a wonderful limestone dale with a river emerging about halfway down, lovely clear water, full of trout. It is also ungrazed for most of its length and the steep slopes have an excellent growth of plants on them. Our quarry was *Procris geryon* Hübn. and *Parasemia plantaginis* L. We were a week too early for the former but I managed to net two specimens of the latter species, both fresh. *Pseudopanthera macularia* L. was abundant, and specimens here are very pale. I returned a week later and found *geryon* very common. At Chesterfield on the 19th the first *Naenia typica* L. came to light. This species was quite common after this although reported as uncommon from most parts of the country.

July began with the best catch of the year in my garden, 44 species, a very different total from the best garden catch at Madmenham of 118 species. The month was spent more or less locally and on the 27th I took my first *Plusia interrogationis* L. sitting on heather during the day

at Beeley Moor. Later they were found sitting on rocks, but care had to be taken on approach or they flew off rapidly. On the 31st of July, the first of a number of *V. cardui* hatched, the result of larvae collected from spear thistles less than a mile from here. We discovered them accidentally while searching for larvae of *Cucullia chamomillae* Schiff., also fairly common in the same place.

The 1st of August brought the first *Antitype chi* L. to light in the garden, another new species. As we had never been to Scotland, a teacher friend and I decided that this should be remedied. Rather an optimistic decision as we wished to explore Scotland by camping, and had between us five children under the age of five. We arranged that my friend, Mr. Brian King, from Sheffield, yet another Brian, should be chief mechanic while I was navigator. The wives were responsible for feeding the masses and arranging bedding and cooking utensils. On the 6th of August we set off, four adults and five children in a 1957 M.G. Magnette, a trailer on the back and a roof rack overhead. Two of the main items on the trailer were the generator and Robinson trap. We also had a 7 lb size calor gas bottle, which proved excellent. We covered 200 miles on the first day and thought we had done well, considering we had to stop at midday to feed the babies. This was a more difficult process than feeding larvae, as babies cannot help themselves! We arrived at Oxham, near Jedburgh, by evening and got permission to camp in a good place near a river. The method of using mercury vapour light on this holiday was to plug the Robinson trap direct to the generator. This meant that the generator either stopped because of a mechanical fault or lack of fuel, or it was still going when I crawled out of the tent in the early morning. Because of noise, it was always sited several hundred yards away. At Oxham nothing of note was recorded except *Plusia festucae* L., but it was a good test for the generator. Rather a late start was made next day, but we had a good run to Edinburgh, made an unintentional tour of the city, and stopped for lunch about a mile the Edinburgh side of the Forth Bridge. On a huge spoil heap here we found larvae of *V. cardui* fairly commonly. However, these later larvae seemed to be heavily parasitized as many of the webs had small white cocoons in them. Luckily we got a camp site near Aviemore that night, and stayed there until the 12th, seeing nobody except a fisherman who went downriver about 6 a.m. every morning. Although a lovely camp site, it was rather disappointing from the lepidoptera angle. Species noted were *Amathes depuncta* L., one only; *Plusia bractea* Schiff., a few, mostly worn; *Stilbia anomala* Haw., one, and *Gnophos obfuscata* Schiff., one specimen. A female *bractea* obliged with ten ova and two moths were forced through before Christmas. On the 9th, on Ord Bon, near Loch an Eilean, we found *Erebia aethiops* Esp. in numbers and saw one *Argynnis aglaia* L. This was such a nice looking mountain, 1404 ft., that we decided to see whether or not a generator could easily be carried to the top, and what light would yield among some good foodplants up there. Returning on the 10th, we gave ourselves plenty of daylight time to reach the top. The generator was tied to my rucksack with the rest of the equipment in a separate bag carried by Brian. It took exactly half an hour from Loch an Eilean without having to switch porters, and this included taking a few more *aethiops* sitting on ferns at rest. We also saw a specimen of the bee beetle (*Trichius fasciatus* L.) sitting on a thistle flower. Once at the

top we searched rocks while waiting for darkness, and then we were ready to start up. When it came to lighting the pressure lamp we found that matches had been forgotten, a stupid mistake, I will admit. The only solution was to light a bunch of dry heather from the short exhaust pipe of the generator. This took some time and when it did catch fire we nearly had a forest fire on our hands! However, we got the pressure lamp going and got a nice position in the shelter of some rocks. Two hours yielded very little except clouds of *caesiata*, so we decided to call it a day and packed up. Just as we were about to descend, the pressure lamp coughed a few times and went out. The only other light we had was a pencil torch at very low power. Brian did a very good job with some rather inefficient navigation by me, and we got down without mishap. We can confirm that the generator is definitely portable and carting it about on a rucksack is good training for any budding mountaineer or for sedentary types wishing to lose weight quickly.

Camp was struck on 12th August and we moved north to the Findhorn Sandhills. One is allowed to camp or park caravans anywhere along the dunes for the usual small fee. Washing facilities are provided near the town end of the dunes, so it would be ideal for a family caravan holiday for an entomologist, not by any means crowded, either. With adventure in our blood, we decided to get as far away from civilisation as possible, so drove well on to the dunes, parked, and carried out a recce. further into unexplored territory. Unfortunately, when we had decided on a route and picked a lovely spot, the car would not even move from her parking spot. It took about twenty minutes to get her out so we then decided to retreat instead of advance and chose a safe site behind a dune quite close to the sea. The feature of the two days here was the constant north-east wind which was distinctly uncomfortable. Even so, some hollows in the dunes were so sheltered that I was full of hope for the mercury vapour light. A good site was found about a quarter of a mile further along from the site and the usual procedure carried out. A last look at the trap at about 11 p.m. did not look particularly promising, but the generator ran all night and was still going when I approached again next morning. Something must have come over the moths late at night because it was swarming with insects. At least 50 *G. obfuscata* Schiff. were sitting around the light, many beautifully fresh. Among species inside were *Actebia praecox* L., five specimens; *Euschesis orbona* Hufn., one; several specimens of *E. comes* Hübn. ab. *curtisii* New.; many *Agrotis vestigialis* Hufn.; numerous dark forms of *Euxoa cursoria* Hufn., and a fair number of *S. anomala* Haw., altogether an excellent night's work. The next night looked even better, but on starting the generator some horrible sounds came from the cylinder and it stopped. A quick strip-down of the cylinder head was done, some oil poured in, and the piston loosened up nicely. Everything together again and another attempt. This time the piston seized solidly, so there was nothing for it but to abandon the idea of any more mothing at Findhorn as we were moving on the following day. A week there would not have been too long, a month in June would have been very rewarding!

Camp was struck again on 14th August and we decided to go across to the west coast. To help on the homeward journey we moved rather southerly and chose a site near the village of Tayvillach on Loch Sween, Argyll. This proved an admirable choice as the site was completely out

of sight and sound of other humans, and had the usual requirements of being fairly flat, a supply of water close by, and sheltered from any strong winds. We stayed here until making for home on the 17th August. Because of the seized-up generator, no light was used on the first night, but next morning we began the task of repair, not the best of places to begin mending mechanical breakdowns. After stripping the cylinder, we came to the conclusion that some sand had probably blown in through the very short exhaust and got down to the big end. Freeing this was quite a job, but Brian King is always determined on such a job, and before long we got it to pieces, poured petrol in the lower end to get rid of all spare sand and metal filings, and smoothed down the big end with a piece of emery cloth. Assembly was fairly easy, and we were overjoyed when she started again without mishap. To summarise the stay here a very relaxed and enjoyable one for all concerned, results with the mercury vapour were somewhat disappointing considering the rich variety of plant life in the area. This may have been due to the time of year. Among insects of interest were *Alcis jubata* Thunb., one of the commonest moths but nearly all worn; *Colostygia salicata* Hübn., one specimen; *Venusia cambrica* Curt., two specimens, and a pair of *Eumenis semele* L., beautifully camouflaged on the lochside rock. *Aethiops* was common, the females being rather light in colour.

We left this site at midday on 17th August, all wishing we could stay for a few more days. Driving back was a delight until we reached Glasgow, which we found rather depressing. That night we had to stoop to a conventional camp site with all mod. cons., situated between Carlisle and Penrith. The campers who inhabit this type of site are, in my opinion, not campers at all, they are just living under canvas, with all home comforts inside a huge frame tent. However, it suited us for one night. The next day we pressed on home and reached Chesterfield for what was to be only an overnight stop to replenish items such as nappies, and to unload camping gear. On the 19th we all travelled down to my parents' house in the Chilterns. Although we had not tried to break records, we had covered nearly 1500 miles, the car performed excellently with only one puncture, and the children had been very well-behaved. Brian King and family only stayed the week-end, but we were once more in Bucks. for a week. The trap went with us and was set up in my father's garden. The first night proved to be the best as a fresh female *Oria musculosa* Hübn. turned up, the third I had seen in the county. There were one or two very hot days during this week and I spent some time in a chalk valley on the dip slope of the hills, an ungrazed valley which used to be very rich in lepidoptera. Butterflies were not very common, but I did see eleven species including one male *Lysandra coridon* Poda, the first seen here for many years. Mr T. J. G. Homer and I visited the scarp slopes on 23rd August, where *coridon* was fairly plentiful. We went to Lyndhurst on the 26th to hunt for larvae of *Heliothis maritima* Graslin. The sky cleared and the temperature dropped to 43°F., but sweeping produced three *maritima* larvae, Mr. Homer finding all three. Light was not very successful, but one *Amathes agathina* Dup. gave itself up, a species we had hoped to see in greater abundance. Mr. Homer had the *agathina* and kindly gave me the *maritima* larvae. They fed well to begin with on sliced runner bean, one went down and failed to pupate, and the other two gradually stopped feeding and died. Theo and I

decided to have another try at Lyndhurst on 29th August and had a new collecting experience, that of not even getting out of the car. There was a violent storm as we approached the area which we thought would soon pass, but no such luck. After we had sat in the car at a lay-by, eaten our tea, discussed possibilities of the sky clearing, and watched the roadside rubbish begin floating away, we decided there was nothing for it but to get back to Henley. Apparently all entomologists have this experience sometime during their careers, not a great consolation at the time!

We came back to Chesterfield on 1st September, and the next field trip was to Clumber Park on the 9th. It was an excellent night for the first hour and then insects became few. We saw *Enargia paleacea* Esp., six specimens, mostly worn; plenty *Diarsia dahlii* Hübn. but most of these were worn. I kept some females for ova which they laid freely. By keeping the larvae in the airing cupboard I got moths through in November, a lovely series with very dark females. About half a dozen *Tiliacea citrago* L. were seen, again some rather worn. There was a magnificent avenue of limes in the park, two miles long, with a double row of trees on each side of the road. *Amathes glareosa* Esp. was very common with singletons of *Trichiura crataegi* L. and *Ortholitha bipunctaria* Schiff., the last a great surprise. The next night we went to Laughton Common, Lincs., to try for *agathina*. We failed with this species, but saw *paleacea*, one *Antitype flavicincta* Schiff., and a very early, well-marked *Oporinia*, as yet unidentified.

We returned to Clumber on 17th September, and among 31 species saw *Aporophyla lunula* Stroem, one; *A. lutulentula* Schiff., *Anchoscelis helvola* L., and another great surprise there, a male and female *Ennomos quercinaria* Hufn. The female was saved for ova, which are now awaiting spring. This expedition had followed an afternoon on a local waste area looking for larvae of *Cucullia absinthii* L. We got 28 in about an hour, along with a few other noctuid larvae and plenty of smaller stuff.

This more or less brought about an early close to the season except for rather an exceptional day while crossing Kinder Scout, 2088 ft., on the 14th of October with a school expedition. About midday the sun came out and *Operophtera brumata* L. swarmed over the heather and short bilberry.

To sum up the year is rather difficult. I had more disappointments and bad nights than in any previous year, yet added two dozen species to my collection, so, all in all, I am well satisfied with 1966. This year Brian and I hope to make our maiden trip to Ireland, so we hope there will be something interesting to report in this year's notes.

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A Visit to Scotland

By H. E. Chipperfield

Like most entomologists my cabinets contain a number of blank spaces, and in an attempt to remedy this state of affairs I decided to take a holiday in Scotland during the second half of July 1966. The date was chosen deliberately to cover the largest possible number of absentees and, in fact, of the eleven species I really tried for, eight were obtained.

Leaving Suffolk on the morning of 18th July I arrived at The Derby

Arms, Witherslack, in the early evening where I found Captain R. A. Jackson, R.N., already in residence. On the way I had made a diversion to Arnside where *Plothedes captiuncula* Treits. was dashing about on the slopes, rather difficult to follow and already getting worn. However, I managed to get a few decent specimens to supplement some kindly sent to me some years ago by Dr. C. J. Goodall. I was surprised to find that *Erebia aethiops* Esp. was apparently not out, especially as this species was flying at Rannoch two days later. Mr. Tierney, at the Derby Arms, kindly allowed both Capt. Jackson and myself to run m.v. lights that night and we both took *Plusia bractea* Schiff. which was one of our quarries. Also present in the trap were melanic forms of *Bombycia viminalis* Fabr. and *Apamea monoglypha* Hufn. and a number of *Platyptilia pallidactyla* Haw. The following day I motored to Rannoch where *Entephria caesiata* Schiff. was very common on the rocks and fences and showing some fine variation. A few *Itame brunneata* Thunb. were flying along the path leading to Glen Lyon and I was surprised to take a single specimen of *Eupithecia distinctaria* H.-S.

On 21st July I climbed Ben Lawers and found *Erebia epiphron* Knoch flying in numbers in all the moist hollows. *Entephria caesiata* and *Xanthorhoe munitata* Hübn. were flushed from the rocks and there were also a few *Scoparia ambigualis* Treits. sub-species *atomalis*.

At Rannoch the m.v. light attracted many *Plusia pulchrina* Haw., several *Plusia bractea* and single specimens of *Apamea furva* Schiff., *Perizoma blandiata* Schiff. and *Eudorea murana* Curt. On Bog myrtle along the Struan Road there were still a few almost fully-grown larvae of *Poecilopsis lapponaria* Boisd. to be found.

Until 23rd July Scotland had been enjoying a heat-wave whilst Southern England was experiencing very wet and stormy conditions. My departure for Rothiemurchus coincided with the end of the heat-wave but the weather did not break entirely and *Itame brunneata* was flying very commonly in the hot sun at Glenmore. On the outskirts of Aviemore *Erebia aethiops* Esp. and *Aricia agestis* Schiff. subspecies *artaxerxes* were flying in small numbers together with a single very energetic *Argynnis aglaia* Linn. Dusking among some Eyebright produced a rather worn specimen of *Perizoma blandiata* but in spite of several other attempts no more could be flushed.

Searching the fence around Granish Moor on 24th July produced *Plusia interrogationis* Linn., *Scopula ternata* Schrank, and *Perizoma minorata* Treits. A further *Plusia interrogationis* and a very silvery *Bombycia viminalis* together with a few *Pleurota bicostella* Clerck. were found in a similar way on 28th.

The m.v. trap produced several specimens of the fine red forms of *Thera obeliscata* Hübn., *Plusia bractea, Plusia interrogationis, Xanthorhoe munitata,* and a single *Amathes depuncta* Linn. The trap also attracted many beautiful forms of *Plusia pulchrina.* I was disappointed that no *Diarsia dahlii* Hübn. or *Euschesis sobrina* Boisd. turned up but I hope to use this as an excuse for a further visit to this lovely area.

Much searching of rocks resulted in a freshly emerged *Gnophos obfuscata* Schiff. being found in Glen Feshie on 28th.

During a climb on Ben Macdui I had the good fortune to see a Dotterel and a Snowy Owl which I was told had settled down in the area. A visit to Loch Ruthven revealed a number of Slavonian Grebes which seem to be doing well there.

Before leaving Aviemore on 31st July I again visited the slope where *Erebia aethiops* had previously been seen and found that it was still on the wing. On thistles at the same place were a number of the beetle *Trichius fasciatus*. Thus ended a most pleasant and interesting trip.

The Shieling, Walberswick, Suffolk. 1.ii.67.

Migratory Species of Lepidoptera noted during 1966

By E. A. Sadler and P. J. Rogers

On 18th May a *V. atalanta* L. was seen at West Tisted, and on the 22nd a *V. cardui* L. was seen in a wood at the same place, flying freely along a ride in cloudy and drizzling conditions. On the evening of the 22nd, at m.v. at West Tisted, one *A. ipsilon* Hufn. and six *P. gamma* L. arrived, and the following day five separate *cardui* and one *atalanta* plus several *gamma* were seen during the day. In the New Forest on the 24th a single specimen of *cardui* was seen together with lone specimens of *U. ferrugalis* Hübn. and *N. noctuella* Schiff. during the day, and at m.v. that night, also in the Forest, one *ipsilon* arrived. Back at W.T. on the 27th two *gamma* came to m.v.

Early in June a great many *gamma* could be flushed in the W.T. area during the day, in the same area on the 9th a male *C. croceus* Fourc. was seen on the wing. On the 13th and 18th single specimens of *L. exigua* Hübn. came into m.v. at W.T. and the nearby village of Farrington respectively, both being worn. At Dungeness on the 25th several *gamma*, one *ipsilon* and one *P. porphyrea* Schiff. came to m.v. Several *cardui* larvae were found on Creeping Thistle, *C. arvense*, at W.T. at the end of the month, and at the beginning of July larvae were found commonly in the Ham Street area of Kent on various species of thistles.

The 3rd July produced a fresh and probably home bred *atalanta* at W.T. On the nights of 6th and 7th in the New Forest at m.v. a total of six *L. quadra* L. were seen, these could of course be locally bred specimens. The 12th at Dungeness saw forty *gamma* at m.v., and on the 23rd it was still very numerous at the same locality, whilst at the end of the month two *ipsilon* came to "Sugar" at Gosport.

On 7th August two *ipsilon* visited "sugar" in the New Forest and there at m.v. the same night one *ferrugalis* and one *noctuella* arrived. The 12th found us at Studland, Dorset, with well over fifty *ferrugalis*, two *noctuella*, two *gamma* and three *exigua* at m.v. Back at West Tisted on the 19th, *gamma* and *ipsilon* arrived at m.v. in numbers plus one *porphyrea* and one *ferrugalis*, the end of the month at the same locality produced fifteen *gamma* and twenty *ipsilon* at m.v.

At the beginning of September several fresh *atalanta* and a newly emerged *cardui* were seen at W.T. On the 7th in the New Forest six *gamma*, eight *ipsilon* and one *porphyrea* came to light and on the following night a similar quantity of each was seen at m.v. at W.T. A shift to the coast at Portland on the 9th found us with over a hundred each of *gamma* and *ipsilon* on the sheet together with an estimated forty *porphyrea*—more

than either of us had seen in the last nine years—plus two fresh *L. unipuncta* Haw., one *H. armigera* Hübn., six *ferrugalis* and six *noctuella*. Two nights later, at the same locality with similar good m.v. conditions, only ten *gamma* and seven *ipsilon* arrived, the same night at Farringdon, three fresh *R. sacraria* L. came to light. On the 17th in a stubble field at W.T. during the day a further specimen of this species was seen and that night, at Gosport, another came to m.v. together with three *gamma* and one *ipsilon*. That same day at Portland one *M. stellatarum* L. was seen and *cardui* was flying abundantly. At W.T. on the 18th on a good m.v. night only two *ipsilon* and six *gamma* arrived, yet two nights later in clear cold conditions, at the same locality, a large quantity of both species plus a few *porphyrea* came to light. That same night, a friend, P. Meredith, took one *unipuncta* to his m.v. at Portland. We returned to Portland ourselves on the 22nd and had forty *gamma*, fifteen *ipsilon*, twenty *porphyrea*, one *unipuncta* and one *exigua* to m.v. The garden Michaelmas Daisies at W.T. on the 21st attracted five *atalanta* and one *cardui*, on the 23rd there were eleven *atalanta* on these daisies, which dropped to ten the following day, that evening at the garden m.v. one *atalanta*, ten *gamma*, eight *ipsilon*, one *porphyrea* and one *ferrugalis* arrived; by the 26th only one *atalanta* remained in the garden. We again visited Portland on the 28th, seeing ten *gamma*, four *ipsilon* and one *porphyrea* at m.v. and a worn *unipuncta* was found on an Ivy leaf. At the end of the month m.v. at W.T. produced only two *gamma* and one *porphyrea*.

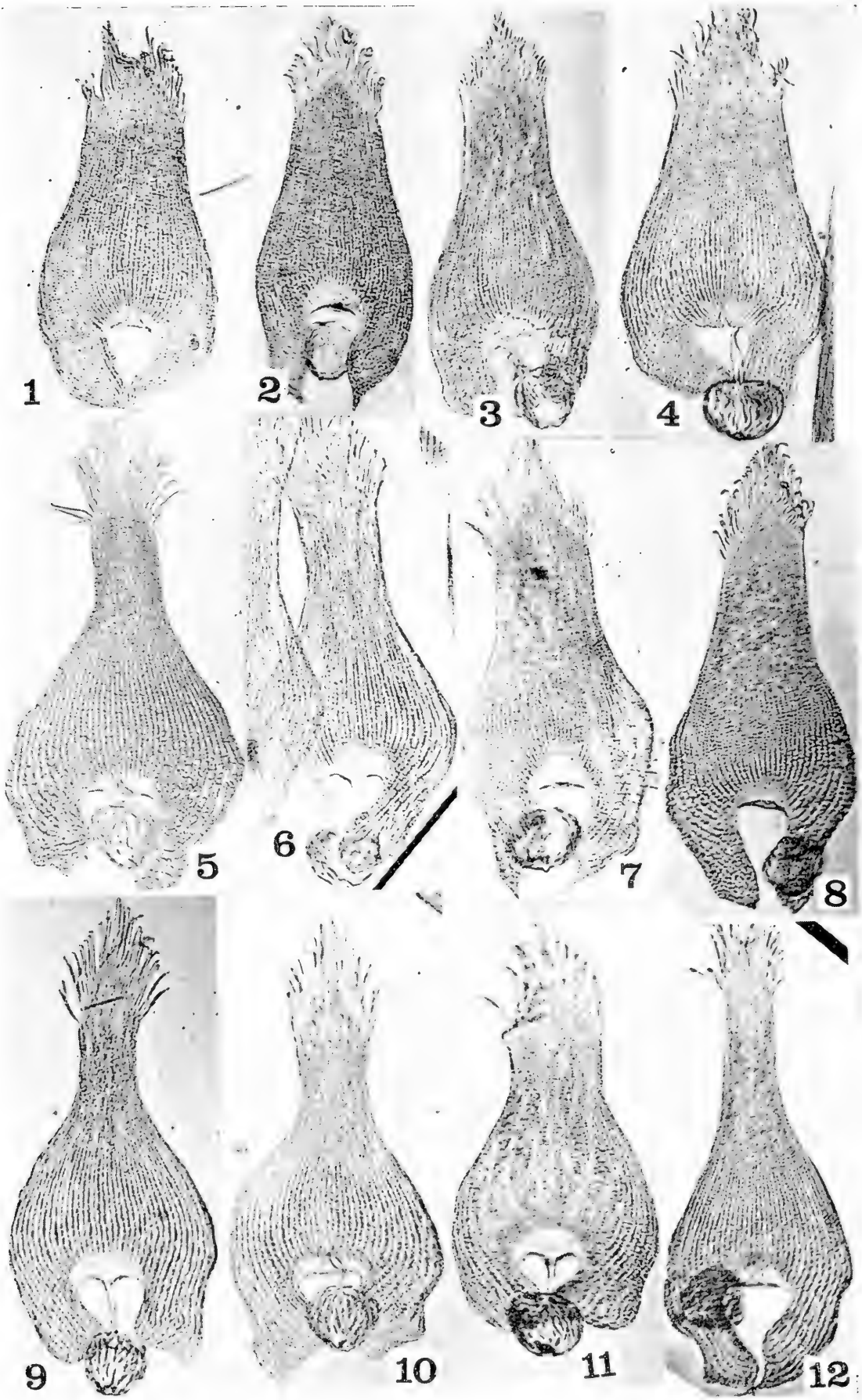
Another friend, R. Cook, informs us that he took two *unipuncta* on 2nd October at Swanage, which locality we visited on the 5th when we saw one *H. convolvuli* L., one *stellatarum*, fifteen *gamma*, six *ipsilon*, four *porphyrea*, two *exigua*, eight *ferrugalis* and six *noctuella* at m.v., plus many more of the ubiquitous *ferrugalis* on Ivy blossom. Return was made to Swanage on the 8th, where at m.v. we saw thirty-five *gamma*, twenty-five *ipsilon*, twenty *porphyrea*, thirty *ferrugalis* and fifteen *noctuella*, plus an *atalanta* which arrived at mid-night. A friend running his m.v. at the same spot the following night also had one *atalanta* to his light, though earlier in the evening than ours. Back at W.T. on the 9th, at m.v., three *gamma*, two *porphyrea*, two *ferrugalis* and one *noctuella* attended. The 13th saw us again at Swanage but, unfortunately, m.v. conditions were bad, so we concentrated on Ivy blossom finding *ipsilon* and *ferrugalis* commonly together with a few *porphyrea*; later the same night back at W.T., one *P. unionalis* Hübn. was found at the m.v. One *ferrugalis* came to m.v. at W.T. on the 22nd, and two days later one *gamma* and one *ipsilon* arrived. At the month's end we paid our last visit of the season to Swanage where, at m.v., we saw four *gamma*, three *ipsolon*, twenty *porphyrea*, thirty *ferrugalis* and one *noctuella*.

7th November produced our last records in a most interesting season when near Effingham, in Surrey, one *gamma* and two *ferrugalis* came to light.

On reflection, without doubt, four species were more abundant than is usual in our experience: *V. cardui* and *U. ferrugalis* especially, also *P. porphyrea* as previously mentioned, not forgetting the relative abundance of *L. unipuncta*.

St. Christopher, West Tisted, Alresford, Hants.

January 1967.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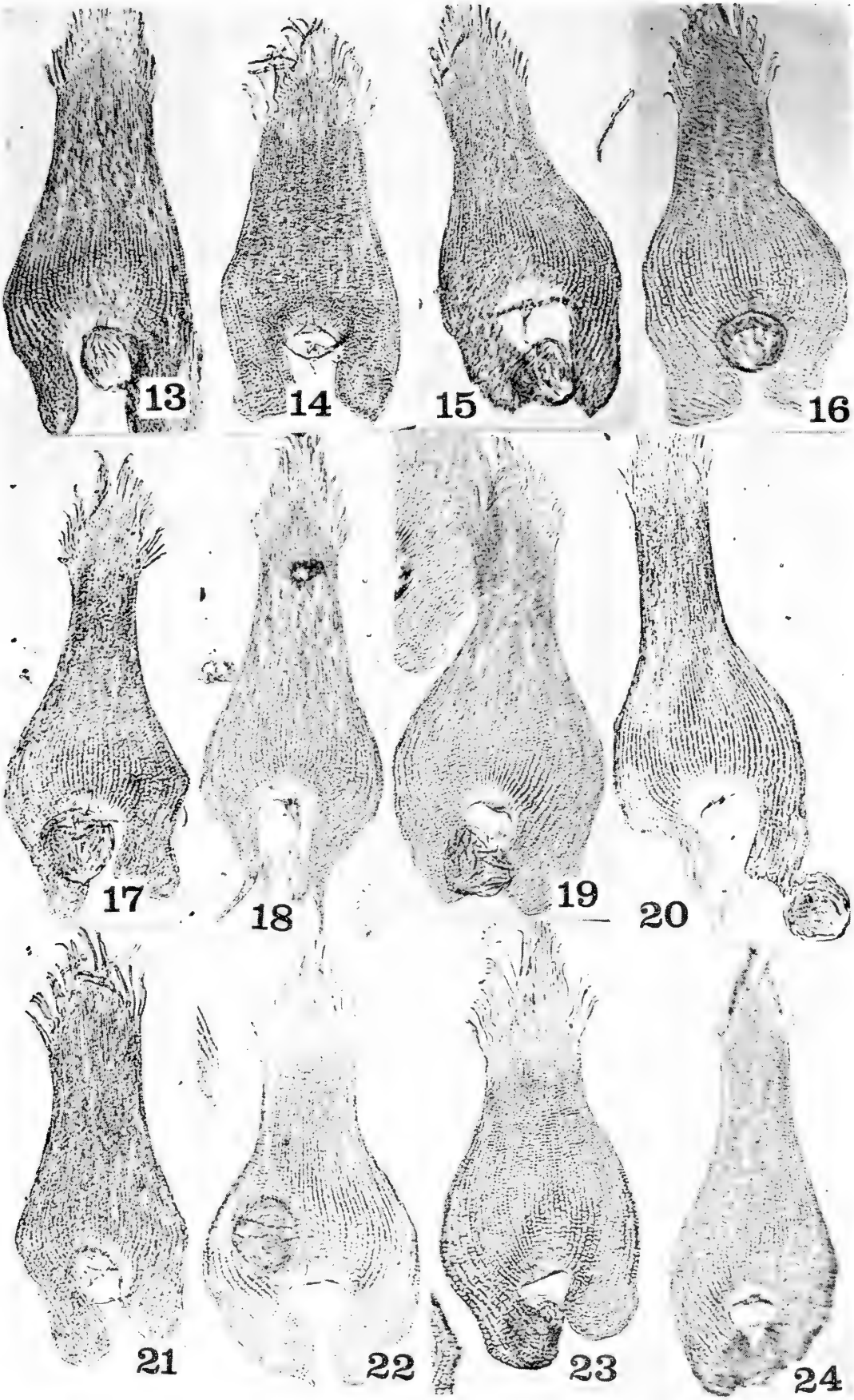
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Supplementary Data on the Androconial Scales of some Holarctic species of *Pieris* (Lepidoptera)

By B. C. S. Warren, F.R.E.S.

My short note on the Nearctic *Pieris* of the *napi* group (Warren 1963), was an effort to establish the features of the androconial scales appertaining to each species or race. The scale characterisation was of a very complex nature, variation very marked but abrupt and discontinuous. Four trends of scale development can be noted: (a) the obvious affinity between most Nearctic insects and the Asiatic species *P. narina,* both in type and range of variation; (b) the occurrence of well-developed *bryoniae*-like scales in the same races as the "a" types; (c) the presence, occasionally in number, of asymmetrical forms and malformation, and (d) a pure *bryoniae* line. The significance of this mixture of characters was not realised at that time. It was two years later before the existence of the Palaearctic hybrid species was recognized. Study of more adequate material and a better understanding of the facts, now shows that most Nearctic forms have originated not from a number of pure, independent lines, but from an amalagamation of two, which, as will be shown later, were in all probability aboriginal forms of the Asiatic species *P. narina* and *P. dulcinea.*

The scale development indicates two groups of Nearctic species, which may be called the *oleracea*-group and the *bryoniae*-group. All the *oleracea* forms display the mixture of characteristics described under "a", "b" and "c", which naturally obscures such individual trends as exist. The *bryoniae*-group "d", includes two races displaying pure *bryoniae* characters; the large, pear-shaped, primitive scale, being conspicuous; this scale is more or less rectangular in the *oleracea*-group.

The scale type of the 1st generations of most *oleracea* species is a very primitive one; i.e., there is little neck development. This type is close, often identical to, that of *P. narina.* A glance at the places will show this. Fig. 1 is a normal *narina* form, which varies towards fig. 8; fig. 2, *virginiensis;* fig. 3, *oleracea* 1st generation southern race; fig. 4, *oleracea* single generation northern race; fig. 13, *macdunnoughii* 1st generation; fig. 14, *venosa* 1st generation. In the last two and *virginiensis* this type predominates, in other species it is frequent. It is impossible to look at these figures without realizing that all are deviations of the same type. Such variation as occurs constitutes an advance in neck development or a rounding off of the general contours, as in figs. 15, 16 and 19. These illustrate what I called the "*bryoniae*" formation; in it one sees the effect of the *dulcinea* element, but of course it is not typical of either *bryoniae* or *dulcinea.* It is noteworthy that the two specimens from which figs. 19 and 4 came, were taken on the same ground, together with others giving more variable forms.

Malformation seems to occur with greatest frequency in the 2nd and single generation. It appears in countless forms. Scales vary in length, width and shape, the contours of the two sides differ, concavities or excrescences occur on any area of the perimeter; the basal prongs differ endlessly being short or long or unequal, broad or attenuated, with concavities in their outer or inner edges, or both (see figs. 17, 18, 20). In the remarkable form shown in fig. 18, they are outward-curving with their outer edges concave. This distortion is even found in *virginiensis,* in

which the scale type is normally one of the most constant. In *P. macdunnoughii* the occurrence of malformation in the prongs is so frequent that deformities often exceed the prefectly developed examples. These abnormalities are of course more obvious when present in large numbers, but even when less numerous they catch the eye as differing from the symmetrical unformity of pure scale types.

Such a mixture of types and distortion of form proves the *oleracea*-group insects to be of hybrid origin, and as such I deal with the individuals as species, though some may only be local races of others.

There may be some who will be reluctant to accept this very definite testimony of the scales. But the androconial scales are structures; of very fundamental nature, equal in importance to the genitalia, both being connected with the perpetuation of the species. The great antiquity of the androconial scales has been proved by paleontological evidence (Warren 1966). In such sheltered structures evolution can only become operative on effects engendered by use. Any recognizable deviation must therefore imply the fulfilment of some need. The characteristics of the androconial scales are known to accord with those of the genitalia. It is over fifty years since Chapman discovered this in connection with certain species of Lycaenidae (Chapman 1912). Twenty years later this was illustrated in species of the genus *Erebia* (Warren 1936). When discussing this accord with the late Dr. Jordan before the publication of my monograph of that genus, he emphasized the importance of the fact that there was no possibility of physical connection between the scales and genitalia, such as might exist in the case of special hairs appearing in certain places and the nature of the substance from which they grew. The only connection between the scales and genital structures lies in the correlation of each to a common specific nature. Such correlation between true, structural characters, proves the existence of what we call species: natural entities that have developed as a unit and remain distinctive. The knowledge that such correlation is a fact greatly enhances the value of characters derived from either source.

Once the effects of cross breeding on the androconial scales in the Palaearctic species were recognized for what they they are, the presence of similar phenomena in Nearctic species could not fail to be noted. That some hybridisation existed among them was obvious, but at first there was difficulty in establishing which ancestral forms might have been involved. While still uncertain on this point Bowden sent me a series of Nearctic specimens he had bred, including hybrids between *P. oleracea* and *P. bryoniae*, and *P. napi* and *P. oleracea*.

The hybrids *napi* × *oleracea* gave a scale very similar to that of the Asiatic *P. dulcinea*. It was perfectly symmetrical with fully developed scent cell and body width, but with a markedly restricted neck (fig. 9). Most often in hybrids there is a reduction in size of the scent cell, sometimes a very marked one (see illustrations, Warren 1961, figs. 61-68). These hybrid scales suggested an advance of the normal *napi* scale (fig. 6), towards that of *P. dulcinea* which has a remarkably narrow neck in proportion to the great width of the body (fig. 5). I had conjectured that *oleracea* might be a hybrid *P. bryoniae* × *P. narina*, but by assuming the cross to have been *P. dulcinea* × *P. narina* several puzzling points were cleared away. Thus, there would be no reason why pure *bryoniae* races should not be found in the region of the hybrid. The "*bryoniae*"-like body contours existing in various Nearctic species could equally well have

derived from the *dulcinea* form. It would also account for the marking of the underside of the hind wings, which is so characteristic in Nearctic insects, for the sharply marked underside is normal in *dulcinea* and has led many writers into the mistake of placing *dulcinea* in the *melete* group. Shirôzu has emphasised that this cannot be so (Shirôzu, 1952), and I have illustrated that the scale bears no resemblance to that of the *melete* races (Warren, 1961).

The scale of the *oleracea* × *bryoniae* hybrid is very different from that of the *napi* × *oleracea* cross. It is symmetrical but distinctly transitional between the parental forms. The regular body contours resemble *bryoniae*, the short, thick neck is of the *oleracea* type, and the entire scale is shorter than is usual in the *bryoniae* races (fig. 11).

Structural transitions are a known feature in interspecific hybrids. I have illustrated a beautiful example of this in a natural hybrid *Erebia*, where four features of the genitalia showed perfect transitional formation, and this was so in each of the three specimens examined (Warren 1957).

Some years previously Bowden had crossed *P. virginiensis* with British *P. napi*. The scale in this hybrid shows the same phenomenon as in the *napi* × *oleracea* cross, the marked neck restriction in spite of the full development of the body (fig. 10). Considering the normal scale type in *virginiensis* (fig. 2), this hybrid form is exactly the reverse of what might have been expected.

Recently, Bowden made yet another cross with *P. virginiensis*. The European race used was said to be *P. bryoniae neobryoniae*. The scale in this hybrid (fig. 12), is in general shape and size a *bryoniae* type, close to either typical *bryoniae* or the subsp. *flavescens*. The *virginiensis* element is not recognizable, but there is considerable malformation, the remarkable hour-glass form of the basal prongs often being suggestive of that known in crosses between *napi* and *bryoniae*, though not quite as extreme. The length of the scale is remarkable when compared with that of the *virginiensis* scale, and the reduction of the body width also, when contrasted with that produced in the *virginiensis* × *napi* cross.

Altogether the *oleracea and virginiensis* crosses with *napi* and *bryoniae* emphasize the great difference in nature that must separate *napi* and *bryoniae*.

On consideration the data derived from these crosses are seen to have further remarkable significance. The fact that either of two species (oleracea *and* virginiensis), *when crossed with a third* (napi), *produce in each case a uniform result in the shape of a scale of a given type* (dulcinea), *that is not normal to any of the three, is proof that all three must carry an element of the* dulcinea *strain. It also shows that the* dulcinea *strain is most potent in* P. napi, *for when* P. virginiensis *and* P. oleracea *are crossed with each other the* dulcinea *scale type does not* appear.

We are fortunate in having proof of the last very important fact. Bowden has crossed these species. The scales of *virginiensis* and *oleracea* differ in many respects, but the scales of the hybrids are transitional, with most approach to *virginiensis*. There is much variation in size, small scales of both types occurring, malformation is frequent and extreme, These results show the two to be distinct species now, a fact reflected in the differences we have described between the *oleracea* and *virginiensis* crosses with *P. bryoniae*. Most noteworthy is the fact that the *dulcinea* type scale does not appear.

It is obvious that *P. napi* is more closely connected to *P. dulcinea* than to either of the Nearctic species which is not surprising. The Asiatic hybrid *P. kamtschadalis* develops a remarkable scale (fig. 23), that caused me to attach the species to the European race *adalwinda* in 1961. I then had only one specimen to rely on. Further material shows that *P. kamtschadalis* is a hybrid of the same nature as the Nearctic species. Fig. 24 shows one extreme scale type linking it with *P. narina*, many intermediate forms exist. The underside markings of *kamtschadalis* make an approach to the *dulcinea* markings, but they vary towards *adalwinda*.

As *kamtschadalis* spread across Asia the scale type became a little more advanced, attaining in Europe a slight increase in body width but with more perfection in neck formation (see fig. 22).

I have demonstrated that *napi* of central and southern Europe must have been evolved from *adalwinda*, and that when crossed with the latter now, the *napi* scale reverts to the original northern type (Warren 1961).

All these facts throw a new light on the old question of the relationship of *P. napi* and *P. bryoniae*. It must be accepted that *napi* is a western offshoot of the *dulcina-narina-kamtschadalis-adalwinda* line. *P. bryoniae* when crossed with the Nearctic species *oleracea* or *virginiensis*, is found to be constitutionally distinct from that line: it cannot therefore be conspecific with *P. napi*. These two species have attained western Europe by different routes, and when crossed now are found to be still as remote from each other as *bryoniae* is from the Nearctic species.

When in course of time and distribution they came into contact the hybrid species (*dubiosa and pseudorapae*), have emerged, and spread over thousands of miles in central and south-western Asia and south-west Europe. These two hybrid species could be classed as one species, their constitution being fundamentally the same; but they were derived from different races of the ancestral forms, probably at different stages in their evolution, the slight difference in the size of their scales pointing to some constitutional difference.

A somewhat similar phenomenon has lead to the spread of the *oleracea* group hybrids over two thirds of the Nearctic Region.

This is of course but a dim outline of past events, but that it explains the nature and relationship of *P. napi* and *P. bryoniae* at the present time. can scarely be questioned.

It may be noted that in spite of their hybrid constitution the various species, or races, of the *oleracea*-group can usually be identified by the scale types, as illustrated, if some allowance is made for the hybrid abnormalities. The fig. 19 was misnamed on my 1963 plate (fig. 4,l.c.) as race *frigida* of *oleracea*, but the scale of the latter is very different. So far, in spite of past records, I have not seen any true *frigida* from northern inland regions. The subsp. *frigida* seems to be located almost entirely on the islands off the east coast of Quebec, Labrador and Newfoundland, though it is said to exist on the mainland of Quebec on the north shore of the St Lawrence. It is a little larger than the *oleracea* of inland localities. In some parts of Newfoundland *frigida* has two generations, and where it has the female of the second is considerably suffused with dark scaling on the upper side as the female of *P. bryoniae*. The female of the first generation is without any such suffusion. These Newfoundland females seem to be the only instance of this suffused type in any species of the *oleracea* group: it occurs, however, in the Asiatic *P. kamtschadalis* and the western *adalwinda*, doubtless inherited from the primeval *narina*.

I have been given much help with material for this paper. I am indebted to Mr. Colin W. Wyatt for the loan of specimens he captured in northern Canadian districts, and his patience in returning many for further examination, for it is always of great value to be able to check results again after having acquired further knowledge. I am also indebted to Dr. Cyril F. dos Passos, for his efforts to get me specimens from the eastern Islands, and to the Authorities of the British Museum (Natural History) for the loan of specimens of *P. kamtschadalis* and to Mr. T. G. Howarth for help in looking for them. To Mr. Yuri Nekrutenko of Kiev I owe thanks for further specimens from Kamchatka. My very sincere thanks are due to Mr. S. R. Bowden for his kindness and generosity in supplying me with series of specimens, the result of his many breeding experiments. It must of course be obvious that without his help this paper would not have been written.

REFERENCES

Chapman, T. A., 1912. An unrecognized European Lycaena. *Trans. ent. Soc. Lond.*, 1912, Pt. IV, 662-676.

Shirôzu, T., 1952. New or little known Butterflies from north-eastern Asia. *Seiboldia*, **1** : 11-37.

Warren, B. C. S., 1936. Monograph of the genus *Erebia*. *Brit. Mus. Lond.*

———, 1937. On a natural Hybrid in the genus *Erebia*. *Proc. R. ent. Soc. Lond.*, Series A, Vol. 12, 4-7.

———, 1961. The Androconial Scales and their bearing on the question of Speciation in genus *Pieris*. *Entomol. Ts.*, Arg. 82, H. 3-4, 1961, 121-148.

———, 1963. The Andrononial Scales in *Pieris*. 2. The Nearctic species of the *napi*-group. *Entomol. Ts.*, Arg. 84, H. 1-2, 1963, 1-4.

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EXPLANATION OF PLATES

Androconial scales of Holarctic species of *Pieris*. ×450.

PLATE VI.

1. *P. narina.*
2. *P. virginiensis.* Ontario.
3. *P. oleracea.* 1st generation. New Hampshire.
4. *P. oleracea.* Single generation. N.W.T.
5. *P. dulcinea.* 1st generation. N. Korea.
6. *P. napi.* 1st generation. Lancashire.
7. *P. oleracea.* 1st generation. Ontario.
8. *P. narina.*
9. **Hybrid. P. napi × P. oleracea.**
10. **Hybrid. P. virginiensis × P. napi.**
11. **Hybrid. P. oleracea × P. bryoniae.**
12. **Hybrid. P. virginiensis × P. bryoniae neobryoniae.**

PLATE VII.

13. *P. macdunnoughii.* 1st generation. Colorado.
14. *P. venosa.* 1st generation. California.
15. *P. marginalis.* 1st generation. Oregon.
16. *P. oleracea.* 2nd generation.
17. *P. macdunnoughii.* 2nd generation. Utah.
18. *P. macdunnoughii.* 1st generation. Colorado.
19. *P. oleracea.* Single generation. N.W.T.
20. *P. marginalis.* 2nd generation. Washington.
21. *P. venosa.* 2nd generation. California.
22. *P. napi adalwinda.* Lapland.
23. *P. kamtschadalis.* Kamchatka.
24. *P. kamtschadalis.* Kamchatka.

New Forest Mercury Vapour Light Records for 1966

By L. W. Siggs

1966 was not a good year as the following figures will show:—

	1966			1962-65	
	Nights	Total	Average	Nights	Total	Average
Mar.	29	2272	78	49	2211	45
Apl.	27	1965	73	105	15822	151
May	19	465	24	109	5293	49
June	29	3093	107	116	19252	166
July	31	6173	199	110	35345	321
Aug.	30	8919	297	119	28411	240
Sep.	28	2679	95	87	11772	135
Oct.	22	740	38	86	5591	65
Nov.	21	465	22	72	1919	27

It will be seen, however, that March and August were above average.

The following additions to the Minstead list are recorded:—

Amathes agathina Dup.
Cerapteryx graminis Linn.
Nonagria sparganii Esp.
Hypenodes turfosalis Wocke.
Horisme tersata Schiff.
Ortholitha mucronata Scop.
Eupithecia plumbeolata Haw.
E. tripunctaria H.-S.

The number of species recorded in 1966 was 317—well down on recent years. The total number of species recorded during the past 8½ years is 441.

308 species have turned up regularly each year since 1962. These may be divided as follows, according to the average numbers recorded over the years 1962-66:—

Over 100 —— 53
51-100 —— 41
21- 50 —— 55
11-20 —— 47
6-10 —— 45
1- 5 —— 67

Mr. J. H. Johnson of Chesterfield and I have compared notes as to the most common species. Here are my "top twenty", showing the average numbers recorded over the years 1962-66.

A. exclamationis L.	2962	*C. blanda* Schiff.	672
N. pronuba L.	2730	*A. monoglypha* Hufn.	601
O. stabilis Schiff.	1508	*O. incerta* Hufn.	522
O. plecta L.	870	*C. vaccinii* L.	398
L. varia Vill.	838	*D. rubi* View.	395
O. cruda Schiff.	802	*S. lubricipeda* L.	331
A. secalis L.	798	*C. alsines* Brahm.	292
O. gothica L.	786	*A. xanthographa* Schiff.	290
P. gamma L.	709	*E. janthina* Schiff.	289
A. c-nigrum L.	682	*L. pallens* L.	280

Migrants put up a varied show. *Agrotis ipsilon* Rott. (1316), *Peridroma porphyrea* Schiff. (167), *Nycterosea obstipata* Fab. (11) and *Rhodometra sacraria* Linn. (7) gave the highest figures I have recorded here, and *Plusia gamma* Linn. (833) and *Laphygma exigua* Hübn. (18), the highest since 1962.

But *Lithosia quadra* Linn. (1) was well down from the usual 10-12, and no other migrant put in an appearance, not even *Leucania unipuncta* Haw., although several of that species have been taken in the Forest this year.

POLYMORPHISM (cf. *Ent. Rec.*, **78**: 67).

Biston betularia Linn.		*Sterrha aversata* Linn.	
typical	102 (89%)	*remutata*	65 (75%)
carbonaria	8 (7%)	*aversata*	22 (25%)
insularia	5 (4%)		

Alcis repandata Linn., typical 49, *conversaria* 1.
Ectropis biundularia Bork., typical 5, melanic 1.
Eilema deplana Esp., typical 5, *unicolor* Bankes 1.
Apamea crenata Hufn., typical 2, *alopecurus* Esp. 1.

Sungate, Football Green, Minstead, Lyndhurst, Hants.

A Collection of Tineid Moths from Nigeria

By Dr. L. A. GOZMÁNY
(Natural History Museum, Budapest, Hungary)

The Editor of this journal, Mr S. N. A. Jacobs, had very kindly lent me a small collection of Tineid moths for identification. The material is part of a larger collection of Lepidoptera, collected by P. Roche, and originating from Lagos, Nigeria. The nine specimens comprising the Tineid lot are as follows:

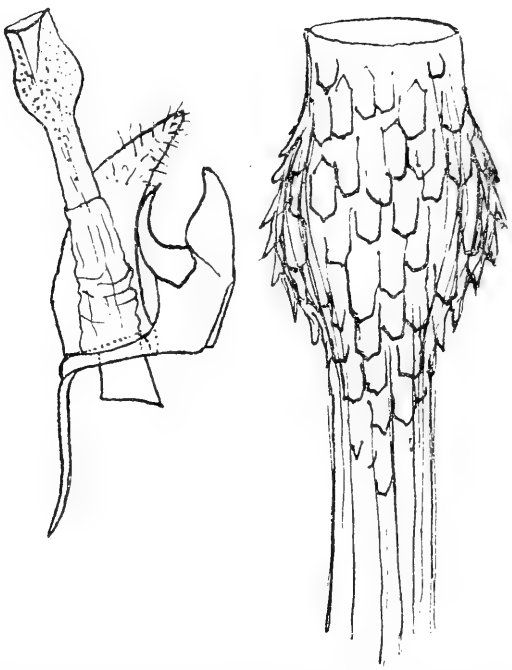

Fig. 1. *Monopis jacobsi* sp.n., laterally, left valva removed, aedoagal apex also at a higher magnification, Holotype; Lagos, Nigeria.

Monopis jacobsi sp. n.—Alar expanse: 10 mm. Head vivid yellow, labial palpi, antennae, thorax brownish fuscous. Basic colour of fore wing a light argillaceous yellow, irrorated with dark fuscous at a rate equal with basic colour; but densest in apical area; no pattern; hyaline spot rather large, oval, in exact centre of wing; cilia dark grey, with 2

lines of fuscous scales; hind wing medium grey with a yellowish sheen, cilia grey.

Male genital organ: valva slightly curving dorsad, evenly attenuating toward pointed apex; aedoeagus one-third longer than thin saccus, almost straight, tubiform, apically calyciform, apex truncate, externally squamose resembling an irregularly imbricate pattern formed by more or less hexagonal scales. (Fig. 1.)

Holotype male: "Lagos, W. Africa, V. 50, Roche; S. N. A. Jacobs, + slide No. 3111, dr. Gozmány".

I dedicate the new species, with gratitude and friendly esteem to Mr. Jacobs.

The new species stands rather isolated among its congeners; it is, on the one hand, one of the smallest known species in the genus, and, on the other, the peculiar structure of the aedoeagus precludes the possibility of confusing it with any one of its allies.

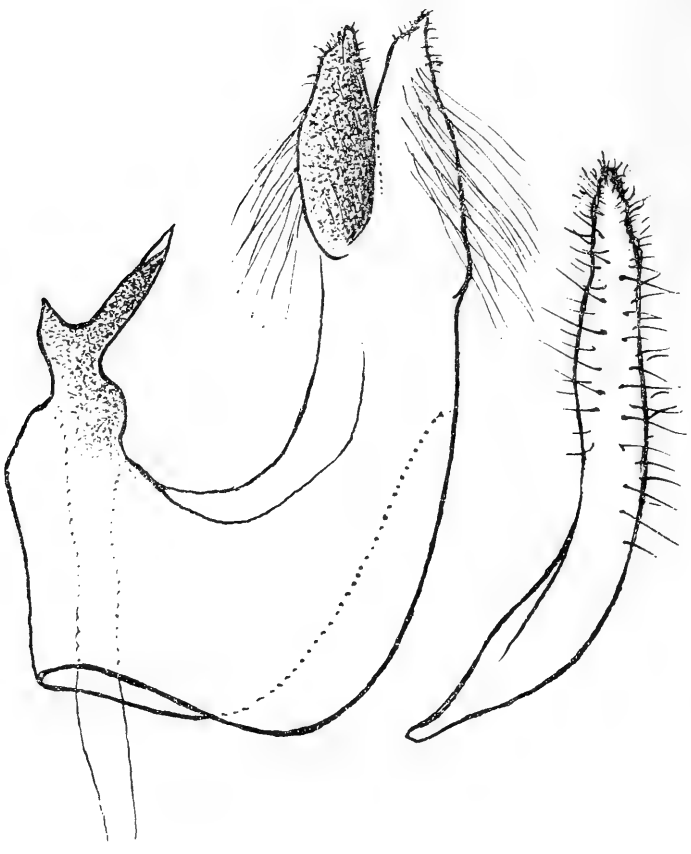

Fig. 2. *Perissomastix nigerica* sp.n., laterally, valvae removed, left valva separated, Holotype; Lagos, Nigeria.

Perissomastix nigerica sp.n.—Alar expanse: 15 mm. Head dark rufous brown, labial palpi light rufous grey, antennae light argillaceous, thorax and fore wing argillaceous with a light greyish suffusion (slightly rufous on costa); no pattern; cilia concolourous with a yellowish sheen; hind wing medium grey (destroyed in holotype during preparation of slide).

Male genital organ: uncus elongately spatulate, finely pointed then obliquely truncate ventrad, with long hairs laterally; valva narrow,

sausage-shaped, curving in basal one-third; aedoeagus bifurcate, ventral arm short, nearly perpendicular, triangularly mucronate, dorsal arm more than twice longer, obliquely erect, tapering to pointed orifice (Fig. 2).

Holotype male: "Lagos, West Africa, XII. 46, P. Roche; S. N. A. Jacobs + slide No. 3109, Dr. Gozmány".

The new species is the southernmost known representative of the *taeniaecornis* Wlsghm.-group of a bifurcate aedoeagus. In all these, mostly North African species (*nigriceps* Rothsch. et Warr.; *taeniaecornis* Wlsghm., *perdita* Gozm.), the ventral arm of the aedoeagus is longer than in *nigerica* sp.n.; the former two have a lateral appendix on the uncus, while in *perdita* the uncus (and the valva) is shaped otherwise.

Perissomastix sericea Gozmány, 1966.—A male specimen (slide No. 3108). The species was recently described from Ghana.

Perissomastix sp. ♀—A female example of a probably undescribed taxon (slide No. 3107). The identification of the females of the genus extremely rich in species is wellnigh impossible for the want of their mates or large series.

Hyperbola pastoralis (Meyrick, 1931). Two male specimens (slides No. 3106, 3110). The species was described from the neighbouring then French Guinea.

Phalloscardia semiumbrata (Meyrick, 1920). The third known example (a male) of the species described from Nairobi and found also on the Ruwenzori! The range as well as ecological requirements of the species are most interesting and would require further study (slide No. 3105).

Syncalipsis optania (Meyrick, 1908). Two male specimens (slides No. 3103, 3104). The species ranges in the western tropical coastal areas of the Ethiopian Region.

The type-material as well as the collection is deposited in Mr. Jacobs's Collection, England.

When received the type-material mentioned in this paper will be deposited in the British Museum collection, and type-numbers will be published in a later issue.—S.N.A.J.

Isle of Canna, 1966. Two Corrections. *Entomologist's Record*, Vol. **79**, p. 98. Line 13, for 1956 read 1966. Line 28, for *L. testacea* read *L. testata*. —J. L. Campbell, Isle of Canna, 16.iv.1967.

On *Pollenia vagabunda* Mg. (Diptera: Calliphoridae in Nottinghamshire

By O. M. White

The clusterfly *Pollenia vagabunda* Mg., which usually is rare in Britain, recurred in Surrey in 1960 and again in 1962. The absence of any further records either from there or from other parts of the country is interesting, and I offer the following in the hope of eliciting more information.

The first British record was that of the two females captured by Carr in Sherwood Forest on 13.viii.1924. It has also occurred in Wales. The larvae of *Pollenia* are said to be parasitic in earthworms.

I searched for *vagabunda* in Sherwood Forest at various times from 1939, but saw none until 30.x.49 when I found a male sunning on a birch

trunk. In the same area of oak-birch woodland and coniferous plantations, my friend Mr. D. K. Dunkin noticed some bluish *Pollenia* flying over short turf in the afternoon sunlight of 26.iii.50, and captured three similar males, one of which I sent to Dr. C. D. Day who confirmed that it was *vagabunda*.

During the next eleven years I found the species in three other localities in Sherwood Forest, all rather hilly sites on the bunter sandstone, with conifers. *Vagabunda* selected sheltered hollows for sunning, in contrast to *P. rudis* Fabr. which extended to sunlit timber in more exposed situations.

Carr's work shows that Sherwood Forest has been fairly well collected in the past, therefore it seems to me reasonable to assume that *vagabunda* has spread in this area, and that it did so a few years earlier than in Surrey.

The highest density of *vagabunda* that I saw occurred during the afternoon of 13.x.56 in the Sutton-in-Ashfield (Notts.) site, where I estimated that there were about fifty imagines sunning on the trunks of planted pines. They generally perched between two and six feet above the ground and preferred the grooves between the plates of bark. A weathered telephone pole was less used, and one perched on my toe-cap as I was writing. Twenty-four *vagabunda* from these contained eleven males; two of the females were undersize at 6 mm. length, measured while fresh, and both had the pruinosity of the (apparent) second abdominal tergite extending to the fore-margin.

Other calypterates currently using this niche were: *Calliphora erythrocephala* Mg., *C. vomitoria* L., *P. rudis* Fabr., *Muscina assimilis* Fln., *Phaonia trimaculata* Bché., and *Helina lucorum* Fln. *Vagabunda* outnumbered any of these species, and was the earliest to leave at about 16 hrs. as the sunlight weakened and the temperature fell.

I never saw any pairing or ovipositing and have not looked for the roosting niche, and I failed to find the species at all in the counties adjoining Nottinghamshire despite the apparent suitability of the sites examined.

Vagabunda is recorded from Sallow bloom. I saw single examples feeding, but only during the autumn, at bird droppings, a decaying grass blade, and at aphid secretion on foliage. Nottinghamshire capture dates were in September and October, and mid-March to May.

REFERENCES

Allen, A. A. (1961). *Ent. mon. Mag.*, **97** : 88.
Allen, A. A. (1962). *Ent. Rec.*, **74** : 243.
Carr, J. W. (1935). Invert. fauna of Notts., Supp. : 153.
Colyer, C. N. and Hammond, C. O. (1951). Flies of the Brit. Is. : 285-286.
Day, C. D. (1948). Brit. Tach. Flies : 92.
Van Emden, F. I. (1954). *R. ent. Soc. Lond., Handb. Ident. Brit. Ins.*, **10** 4 (a) : 117.

78 Eastdale Road, Nottingham. 5.ii.1967.

Current Literature

Handbook for the Identification of British Insects. Vol. X: Pt. 2 (c). **Diptera: Pipunculidae.** By R. L. Coe. 1966. 83 pp. Published by Royal Entomological Society of London, 41 Queen's Gate, London, S.W.7., at £1 7s. 6d.

In December, 1966, Mr. Coe described five new species of *Chalarus* and one of *Verrallia* in a paper in *Proc. R. ent. Soc. Lond.* (B.) illustrated with 26 figures. These species, with the figures, are included in the Handbook. In this present work a further 13 new species are described to make a total of 75 species in Britain. Another species is keyed but not named as the unique specimen has become damaged. A fate of too frequent occurrence with dried specimens whose heads seem to spring off at the slightest vibration. In 1901, Verrall monographed only 32 species. Even now several species are known only in one sex. This work should stimulate further study and promote the collection of paired specimens so that gaps in our knowledge can be filled. Besides the keys, supported by 193 figures, there is a valuable reference list of 95 items, a full index and a generous introduction of 23 pages.

It is in this introduction that the author records his new discoveries obtained in rearing some of the species of these "big-headed" flies that are parasitic on Homoptera. His careful study has been based on much research work in the field, laboratory, and library and in the examination of types and of many collections of amateurs. He summarises this in the sections dealing with the characteristics of the family, life-history, early stages, adult structure, habits, ectoparasites and predators and fossil Pipunculidae. There are short paragraphs on nomenclature and classification. The first description of the egg of a Pipunculid is accompanied by a plate. The section dealing with collecting and preparation is extremely helpful, covering both adult and early stages. Guidance in the use of the keys comes from the "general notes on the keys". Testing the keys has shown them to be adequate with the terms defined in the text or by illustrations. Naturally the publication of the work will mean that many old records based on Verrall's work will need re-examination. Fortunately Mr. Coe has returned "named" specimens to the collectors and institutions who have assisted him by providing material for examination.

This is but the fifth part of the two volumes allocated to the British Diptera to appear in the 18 years. The bulk of the pages in these parts have come from Mr. Coe who has made a most valuable contribution to British Dipterology.

It will be noted that *Dorilas modestus* Haliday of Kloet and Hincks Check List has been omitted. The type has not been traced and even Verrall regarded it as a *species incerta* thus it should not have been accepted in the 1945 Check List. There are a few minor amendments to be made.

Page 16. Line 28 for "conjuctiva" read "conjunctiva".

„ 50. The 1894 capture of *Pipunculus phaeton* by J. W. Yerbury was made at Hamworthy, near Poole, Dorset.

„ 58. Insert "6" before the couplet dealing with *curtifrons*.

„ 67. *Eudorylas melanostolus* Becker was reared on 10 May, 1907 from a pupa gathered on 25 March by Hugh Scott. L. P.

Insects of the British Woodlands by **R. Niel Chrystal, M.A., D.Sc.** 370 pp. + 33 pl. Frederick Warne & Co. Ltd., 17/-.

In his preface the author points out that this book is written mainly for the use of forestry students and foresters, so the language used has been kept as simple as possible, but care has been taken that this simplification has not been allowed to interfere with clarity.

The first chapter is headed Introduction, and firstly it is made clear that it is with the insects associated with forest trees that the writer is concerned, and not those associated with woodland plants generally. The author explains that woodland is a community of living things whose welfare is regulated by many factors, all of which have to be studied by the forester if a balanced whole is to be achieved. A brief account of insect life is given. firstly dividing them into seven groups according to their feeding habits; the phylum Arthropoda is then explained and the insect's position in the phylum, and the insect's anatomy is described in some detail so that the various forms of the same organ in different orders may be appreciated. There is a key for the indentification of the principal types of insect larvae and pupae, and the insect orders are explained.

Chapters II to VII deal with the various insect orders of concern to the forester and chapter VIII deals with the origins of attacks, their control by natural and artificial methods, and the collection of specimen material and its forwarding for identification. In these chapters, the orders and their relation to the growing of healthy trees are mentioned in some detail with drawings and photographs, showing feeding damage, galls and some of the adult insects to assist in their identification.

There are two useful appendices: I. gives more detailed descriptions of forest insects mentioned in the main work, mainly coleoptera, together with a few hymenoptera and diptera species. Appendix II lists species under their biological groups as mentioned above, giving family, name, and forest trees mainly affected. There follows the index and after this a supplement in six parts, the first being a key by means of which the perpetrators of damage to conifers and hardwood trees may be determined, with a plate showing various forms of larvae of tree coleoptera, and also figures to typify Syrphid larvae and those of lacewing flies. There are also enlarged drawings of the serration at the extremity of the elitra to distinguish the two Scolytid beetles *Ips sexdentatus* and *I. typographus*. The second key classifies damage by wood-boring species and bark feeders, with a final note on two gall-making species, the familiar *Saperda populnea* and the willow gall fly, *Cecidomyia saliciperda*. The third deals with sucking insects showing that both forest pests and beneficial predators on pests are to be found in this group. IV deals with defoliators. V is entitled A Synopsis of Forest Relations of bark and wood boring insects and VI A synopisis of Forest Relations of Insect Predators and Parasites, both of which are self explanatory.

As one would expect of this author, the subject is handled in all its aspects in a manner best calculated to give the instruction required and to enable the student to apply his own efforts to the best purpose. Although the cultivation of conifers is unpopular with country lovers, it must be admitted that in these hard times this use of otherwise uneconomic land is a necessity, and it follows than the cultivation of healthy trees must be aimed at. This does not mean that broad-leaved trees are neglected, however.

The illustrations, both photographic and line drawings are of good quality and the book is well printed on good paper; it is bound in cloth boards, and should be a welcome addition to the general bookshelf of any entomologist as well as that of the professional entomologist. The reasonable price should bring it within the reach of those for whom it is, in the first place, intended.—S.N.A.J.

one (P. F. Harris). Cliftonville, June 13, 1945 (W. D. Bowden).

10. Sevenoaks (Stainton, *Man.*). Westerham* (Gorham, *Ent. week. Int.*, **7**: 28). Knowle Park, about 8 at rest on walls, 1939 (H. E. Hammond).

11. Yalding (*V.C.H.* (1908)). Shipbourne (P. A. & D. J. A. Buxton coll.). Aylesford (G. A. N. Davis). Hoads Wood (E. Scott). Sevenoaks Weald, June 18-August 18, 1959; 1960; common (E. A. Sadler).

12. Ham Street, 1948 (C.-H.). Ashford, common (P. Cue). Wye, August 25, 1953 (1); September 18 (1), October 1 (1), 1954; June 23-July 11 (3), August 2-29 (6), 1955; June 26-July 9 (3), August 15-October 1 (9), 1956; Willesborough, June 17-July 10 (3), August 28-October 8, 1954; June 27-July 7 (4), August 16-September 20 (28), 1955; June 11-July 13 (12), September 1-23 (23), 1956; June 24 (1), August 16 (1), September 4 (1), 1957; August 29 (1), 1958; September 14-21 (3), 1963 (W. L. Rudland). Orlestone Woods, June 2, July 28, 1956 (R. F. Bretherton). Common at Orlestone Woods, Willesborough, and Brook (M. Singleton).

13. Tunbridge Wells (E. D. Morgan); two or three, 1958-59 (L. R. Tesch, *per* C. A. Stace).

14. Tenterden, very common (Stainton, *Man.*). Sandhurst, at light (G. V. Bull). Goudhurst, common (W. V. D. Bolt, *pers. comm.*, 1961).

15. Dungeness, one, July 19, 1932 (A. M. Morley).

16. Near Hythe*, plentiful (Morley (1931)). Folkestone (Morley, *Ent. Rec.*, **64**: 171).

First Record, 1835: Kent (Wood, *Index Entomologicus*, 127).

Phytometra viridaria Clerck (**aenea** Hübn.): Small Purple-barred.

Native. Chalk downs, woods, heaths; foodplant unknown. Plentiful in 5, 6, 7, 8. "Common in many places" (*V.C.H.* (1908)).

1. Near Birch Wood (Stephens, *Haust.*, **3**: 121). S.E. London (Lee district), "has quite disappeared (1894), though formerly common" (Fenn, *Ent. Rec.*, **6**: 231). Brockley (West, *Ent. Rec.*, **18**: 230). Dartford Heath (Fenn, in *Wool. Surv.* (1909)). Chislehurst, one, May 19, 1921 (S. F. P. Blyth). Petts Wood, one, 1947, one, 1948 (E. Evans); 1950 (A. M. Swain). West Wickham (Trundell, in de Worms, *Lond. Nat.*, 1955: 66).

3. Blean Woods, one, May 16, 1866 (Fenn, *Diary*). Timber Wood, May 14, 1939 (12); East Blean Wood, May 20, 1939 (several) (C.-H.). Herne Bay, August 1, 1940 (A. J. L. Bowes).

6a. Near Darenth Wood* (Stephens, *loc. cit.*).

11. Wateringbury (*V.C.H.* (1908)). Mereworth Wood, a few, July 12, 1933 (A. R. Kidner, *Diary*). Hoads Wood (P. Cue).

12. Ham Street (Scott (1936)); frequent in Long Rope and adjacent woods in the Orlestone group; fairly numerous at m.v.l., July 1951 (C.-H.); common, 1959-60, in Orlestone Woods (M. Singleton).

13. Tunbridge Wells district (Cox, *Entomologist*, **4** (62): ii); common (E. D. Morgan). [Groombridge (*Proc. S. Lond. ent. nat. Hist. Soc.*, 1931-32: 59), may be Sussex.]

14. Tenterden (Stainton, *Man.*).

15. Dymchurch, one at car lights, July 27, 1948 (P. le Masurier).

16. Folkestone (Morley, *Ent. Rec.*, **64**: 171).

First Record, 1830: Stephens, *loc. cit.*

Parascotia fuliginaria L.: Waved Black.

Resident. Old cellars, gardens; pabulum unrecorded.

The history of *fuliginaria* in Kent is rather curious. There are records

of the capture of some five authentic examples between 1881 and 1891, all in North-West Kent. Thereafter, it seems the species was not seen again in the county for over 70 years, until in 1963 and 1965, when it appeared in East Kent, in three widely separated localities.

1. Lewisham, August 1, 1881, a ♀ moth and two vacated cocoons in a cellar (Smith, *Entomologist*, **14**: 212; idem, *Ent. mon. Mag.*, **18**: 108); two ♀♀ taken here shortly afterwards were assumed to have originated from these cocoons (Smith, *Ent. mon. Mag.*, **18**: 109). [Lewisham, one bred, 1882, A. Noakes (*Ent. Rec.*, **20**: 285). Two ♀♀, Lewisham, are in Dale coll., one of which is dated August 1886 (*Ent. mon. Mag.*, **45**: 176). One, "Blackheath, Stevens" (*Ent. Rec.*, **8**: 15-16).]

2. Deptford*.—"Has been taken near Deptford . . . by Mr. Farn" (*V.C.H.* (1908)).

6. Greenhithe.—"Has been taken . . . at Greenhithe by Mr. Farn" (*V.C.H.* (1908)); a ♂ taken by A. B. Farn in his light trap on August 2, 1891 (Huggins, *Ent. Gaz.*, **2**: 75).

8. Dover, 1963, July 30 (♂), August 7 (♂), both taken by G. H. Youden in m.v. trap (Youden, *Proc. S. Lond. ent. nat. Hist Soc.*, 1963 (1): 45; and *in litt.*).

12. Ashford.—♀ taken at light by P. Cue in his garden in the town, July 15, 1963 (P. Cue). Potters Corner, one in a house, July 31, 1963 (J. G. Elliott, in Scott (1964)).

15. Lydd, one taken in the village at light by D. W. H. ffennell, August 15, 1965 (D. W. H. ffennell, *in litt.*).

First Record, 1881: Lewisham (Smith, *Entomologist*, **14**: 212).

Gonopterinae

Scoliopteryx libatrix L.: Herald.

Native. Woods, osier beds, marshes, waste places, etc.; on *Salix caprea*, osier, poplar. Found in all divisions; frequent, but seldom if ever plentiful. "Generally distributed" (*V.C.H.* (1908)).

The moth appears from late July or early August, and may thence be seen until November, and again after hibernation from March to June. In 1923, James (*Ent. Rec.*, **35**: 163) records a "hibernated specimen" on the Deal sandhills that year on August 3, an abnormally late date, if indeed it was hibernated. It is sometimes noted at light and sugar; and Knaggs (1870) records it as having occurred at ivy bloom in the Folkestone district. Human habitations and outhouses are frequently chosen by the moth in which to hibernate, and many of the records are of its having been found in such situations.

The larva has been taken at West Wickham on *S. caprea* (C.-H.); at Charlton sandpit, on willow, July 31, 1946 (J. F. Burton); at Sevenoaks Weald, on poplar and *S. caprea* (E. A. Sadler); commonly at Dartford (div. 1) on poplar (B. K. West); and frequent on *Salix* at Chislehurst, 1951 (A. M. Swain). Also bred September 5, 1890, from a larva taken at Deal on osier (Fenn, *Diary*). D. R. M. Long has taken the larva at Chislehurst on sallow and poplar, and a pupa at Bromley on "weeping willow".

First Record, 1859: Darenth Wood (Harding, *Ent. week. Int.*, **6**: 75).

[**Cosmophila sabulifera** Guen. ssp. **bipuncta** Warr.

Importation?

13. Goudhurst.—"I captured last autumn, at sugar in my own orchard,

a specimen of *Cosmophila sabulifera* ab. *bipuncta* (Warren), which is an inhabitant of N. Africa, Japan, Malay and Australia" (Smyth, *Entomologist*, **69**: 169); this specimen, which was taken in September 1935, was exhibited by G. V. Bull at the meeting on April 23, 1936 (Bull, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1936-37: 7).]

HYPENINAE

Bomolocha fontis Thunb. (**crassalis** Treits.): Beautiful Snout.

Native. Woods; [on bilberry].

The species is apparently scarce and local in Kent, and like *Cephis advenaria* Hübn. (*q.v.*), has undoubtedly decreased in those areas where there has been a reduction of bilberry.

10. Westerham.—(see *First Record*). "Mr. Plastead first discovered this beautiful insect in shady groves at Westerham" (1829, Curtis, *Br. Ent.*, 288). "A very rare species within the metropolitan district, having only, so far as I am aware, been taken near Westerham in Kent by Mr. Plastead, and the late Mr. Haworth" (1834, Stephens, *Haust.*, **4**: 13). "About fifty years since, Mr. Plastead caught a specimen . . . near Westerham, in Kent; a fact he communicated to my late friend Haworth, who proceeded in due season to the spot, and supplied his cabinet with a pair" (1851, Stephens, *Zoologist*, 3164). At Westerham (1859) (Gorham, *Ent. week. Int.*, **7**: 28); several, June 1919 (E. J. Hare); "*Bomolocha fontis* . . . apparently on the decrease" (Jacobs, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1934-35: 17); in Goodly Stock, June 17, 1955 (♀), June 30, 1956 (♀), June 14, 1959 (♂) (C.-H.).

Sevenoaks.—June 17, 1851, three (Stephens, *Zoologist*, 3164); 1867 (Meek, *Ent. Ann.*, 1868: 121); 1868 (Gill, *Ent. Ann.*, 1869: 142). Seal Chart, "usually common" (Carrington, *Entomologist*, **13**: 79); one, July 20, 1888 (Fenn, *Diary*). Brasted, July 6, 1901 (Adkin, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1901: 23); one, June 6, one, July 13, 1914 (Gillett, *Diary*); not common (R. M. Prideaux).

11. Mereworth Woods (E. Goodwin, *teste* W. A. Cope). Sevenoaks Weald, one at m.v.l., June 21, 1959 (E. A. Sadler).

FIRST RECORD, 1802: *Pyralis achatalis* (Haworth, *Prodromus*, 29). Identified in Haworth (*Lepidoptera Britannica*, **2**: 367), with the provenance: "Exemplaria tria anglicana solum vidi. Imago i. Jun. Nemoribus Cantianis".

Hypena proboscidalis L.: Snout.

Native. Hedgebanks, thickets, copses, waste places, etc.; on *Urtica dioica*. In all divisions. "Generally common" (*V.C.H.* (1908)).

Although often plentiful amongst stinging nettles, especially in sheltered situations, and where the plant has become rank from being allowed to grow unchecked, the species may be markedly rarer in the area adjacent to the metropolis. At Bromley (div. 1), D. R. M. Long's m.v. trap counts for the past few years are: 1962 (20), 1963 (85), 1964 (87), 1965 (31); but further west in this division, at Blackheath, on the border of the metropolis, A. A. Allen records it as "rare and very local among nettles".

The moth is seemingly regularly double brooded; the first generation appearing about mid June to late July or early August, with a partial second generation throughout September and early October; the latter

generation specimens being appreciably smaller.

The larva on *U. dioica* at Bromley (D. R. M. Long); at Sidcup, May 27, 1928, young larvae fairly plentiful, September 19, 1928; at Farningham, several young larvae, September 14, 1926, several, May 20, 1928, young larvae fairly plentiful, September 27, 1929, September 25, 1930, May 10, 1931 (A. R. Kidner, *Diary*); at Chevening, imago emerged, June 18, 1917, ex larva (Gillett, *Diary*).

First Record, 1861: Lewisham (Fenn, *Diary*, 20.vi.1861).

H. rostralis L.: Buttoned Snout.

Native. Hedges, gardens, bushy places; on hop.

Obs.—Hammond and Smith (*Ent. Gaz.*, **6**: 170) recorded the larva as parasitized at Tunbridge Wells by a dipteron, *Blepharidopsis nemea* Mg.

1. Lewisham (Stainton, *Zoologist*, 1089, 1229). Lee, common, August 26, September 5, 1861 (Fenn, *Diary*); (Carr, *Entomologist*, **34**: 108). Chislehurst, a few at sugar, August 1889 (Warburg, *Young Nat.*, **10**: 233). Eltham; Westcombe Park; Blackheath; Shooters Hill; Greenwich (*Wool. Surv.* (1909)). Sidcup, seen most years, 1909-36; fairly plentiful at sugar and ivy, October 1909, October 2, 1923; larva, July 27, 1909, several larvae, July 5, 1925 (A. R. Kidner). West Wickham (Kershaw, *Entomologist*, **51**: 66); (de Worms, *Lond. Nat.*, 1955: 75); one, October 9, 1956 (C.-H.). Bexley (L. T. Ford). Charlton, one, worn, June 8, 1947 (J. F. Burton). Blackheath, occasionally netted after dark in garden and in lane; one at light, c. 1949; not so far at m.v.l. (A. A. Allen, 24.iv.1960). Abbey Wood, 1952 (J. Green). Slade Green, larvae beaten from hop, July 18, 1954 (Hards, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1954-55: 87). Bromley, one, June 7, 1961 (D. R. M. Long).

2. Near Sheerness, 1871, very common in thatch and at ivy (Walker, *Ent. mon. Mag.*, **8**: 185). Higham, September 19, 1912 (F. T. Grant). Royal Oak, Sheppey, two, September 22-26, 1868 (J. J. Walker MS.).

3. Blean Woods, one, June 1, 1866 (Fenn, *Diary*). Herne Bay, April 1, 1933 (A. J. L. Bowes). Eddington, March 17, 1952 (D. G. Marsh). Broad Oak, odd specimens noted annually in spring and autumn; eight, May 22, 1939 (C.-H.). Canterbury, ♀, September 12, 1950 (D. G. Marsh).

4. Deal Sandhills, one, September 20, 1894 (Fenn, *Ent. Rec.*, **5**: 300). Reculver, September 19, 22, 1935, September 14, 1937 (A. J. L. Bowes).

5. Chelsfield, abundant 1900 (Carr, *Entomologist*, **34**: 108). Chevening, September 23, 1914 (Gillett, *Diary*). Halstead (R. E. E. Frampton MS.). Westerham (R. C. Edwards).

6. Longfield (Jennings, *Entomologist*, **4** (53), ii). Greenhithe* (Farn MS.). Chalk, September 22, 1912 (F. T. Grant). Clay Lane Wood (H. C. Huggins). Horton Kirby (E. J. Hare).

6a. Mark Oak Wood* (Chaney (1884-87)).

7. Chatham* (Stainton, *Man.*). Wigmore Wood; Darland Hill (Chaney (1884-87)). Sharsted (H. C. Huggins). Westwell (Scott (1936)). Eastwell (Scott (1950)).

8. Folkestone* (Knaggs (1870)). Barfreston (E. & Y. (1949)).

9. Ramsgate, one, August 4, one, September 17, 1912, one, April 1916 (J. W. C. Hunt). Minster, one, October 2, 1915 (H. G. Gomm); one, May 13, 1954 (W. D. Bowden).

10. Sevenoaks, May 13, 1919 (Gillett, *Diary*).

11. Yalding (*V.C.H.* (1908)). Shipbourne (P. A. & D. J. A. Buxton

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION
(Founded by J. W. TUTT on 15th April 1890)

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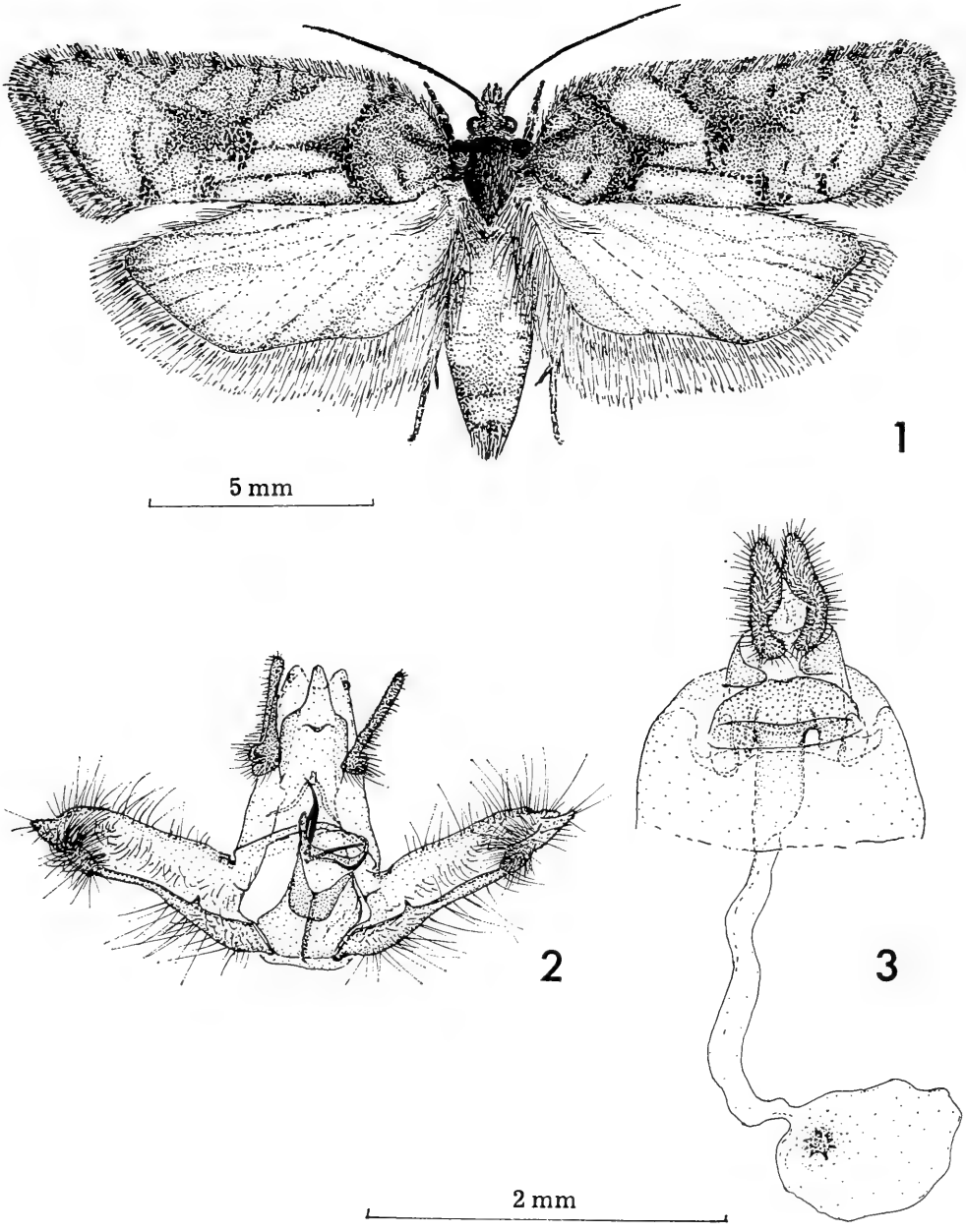


Figs. 1-3. *Acleris abietana* (Hübner)—(1) Female, Aberfoyle, Perthshire. (2) Male genitalia. (3) Female genitalia.

Acleris abietana (Hübner, 1819-22), a Tortricid moth new to the British Isles

By E. C. Pelham-Clinton

Amongst some Lepidoptera submitted for identification in autumn, 1965, by Mr. D. L. Coates was a female *Acleris* collected on 11th October, 1965, in his mercury-vapour light-trap at Aberfoyle, Perthshire. The specimen resembled *A. hastiana* (Linn.) but its rather long wings and numerous scale-tufts suggested a different species which I was able to recognise from continental illustrations as *A. abietana* (Hübner). Mr. J. D. Bradley, of the Commonwealth Institute of Entomology, kindly confirmed the identification by dissection and comparison with continental material in the British Museum (Natural History).

The following spring Mr. Coates was lucky enough to collect another specimen: a male of a very similar form came into his trap on 14th March and provided confirmation that the species is resident in that area.

Acleris abietana appears to be rare in continental collections and no doubt it is a difficult species to collect. According to Hannemann (1961) the larvae feed in May and June on spruce (*Picea abies* (L.) Karst.), spinning the needles together, and prefer the higher trees. Razowski (1966) gives also *Pinus* and *Abies* as foodplants. The moth emerges in autumn and hibernates. Perhaps, as in *A. hastiana,* adults are seen more often after hibernation than before. With Mr. Coates I made a search of spruces in the area in June, 1966, but we found no sign of larvae; however, Hannemann's reference to high trees suggests that larvae might usually be out of reach.

The distribution on the continent is throughout northern and central Europe as far south as the Italian Alps.

In general appearance (fig. 1) *A. abietana* is not unlike a rather long-winged *hastiana.* In *abietana,* however, there is a strong curved ridge of raised scales bordering the basal patch of the forewing, thickened to form a tuft just above the fold: at the middle of the inner edge of the central fascia is another large scale-tuft, and two smaller tufts are at the edges of the fascia where it meets the dorsum. The colour is normally some shade of brown, the basal patch, vaguely defined median fascia and numerous strigulae towards the apex somewhat darker. The figure is drawn from the female specimen from Aberfoyle, but to emphasise the markings it is not as dark as the original and more like some of the continental specimens in the British Museum (Natural History). Less variation has been recorded in this than in some other species of *Acleris,* the most striking forms showing a development of white patches on the forewings: in extreme forms these occupy most of the wing area; four forms are illustrated by van Deurs (1956).

The male and female genitalia are illustrated in figs. 2 and 3 respectively, the male drawn from a continental specimen in the British Museum (Natural History) and the female from the Aberfoyle specimen. Both show good distinctions from other British species: in the male the short aedeagus with two long cornuti is characteristic (the specimen from Weimar figured has a shorter third cornutus), also the short pointed projection from the sacculus: in Hannemann (1961) and Razowski (1966) the sacculus is shown more flattened with the projection pointing ventrad giving a very different appearance to the valva.

Acleris abietana was described by Hübner (1819-22, *Sammlung europäischer Schmetterlinge* VII: Tortrices. Pl. 44, figs. 275, 276) in the genus *Tortrix* Linnaeus. An earlier *Tortrix abietana* was described by de Villers (1789, *Linnaea ent.* **4**: 532) from specimens collected by Paykull in Sweden. However, no type material of de Villers' species can now be found and as the species cannot be recognised from the original description de Villers' name must remain a *nomen dubium*, though it is possible that it refers to the same species.

REFERENCES

Hannemann, H. J., 1961. Kleinschmetterlinge oder Microlepidoptera I. Die Wickler (s. str.) (Tortricidae). *Die Tierwelt Deutschlands*, **48**.

Razowski, J., 1966. *World fauna of the Tortricini (Lepidoptera, Tortricidae)*. Krakow, 576 pp.

Van Deurs, W., 1956. Sommerfugle VIII. Viklere. *Danmarks Fauna*, **61**.

Royal Scottish Museum, Edinburgh.

The generic name *Ilione* (Diptera, Sciomyzidae)

By George C. Steyskal,
Entomology Research Division, Agricultural Research Service,
U.S. Department of Agriculture, Washington, D.C.

In a recent number of *Ent. Rec. and Jour. of Variation*, vol. 78, p. 229, J. E. Collin stated: " . . .the generic name of *Ilione* Hal. (1839) published in Curtis' 'Guide' with *Tetanocera lineata* Fln., as its sole included species, became a valid generic name. . ."

I find no reference to Curtis' Guide "1839". Sherborn (Index Animalium, p. 3116) cites "*Ilione* A. H. Haliday in Curtis, Guide Brit. Ins., ed. 2, 1837, 288.—Dipt." and makes no mention of a *lineata* (nor *-us, -um*) in connection with a genus *Ilione*. Neave (Nomencl. Zool., vol. 2, p. 767) makes the same citation of *Ilione* and adds "[n. n.]" (nomen nudum). I have checked a copy of Curtis (1837, ed. 2) and find the following on page 280, under Addenda:

. . . THAIS Hal.
15. *silvatica*
HYDROMYIA Desv.
ILONE Hal.
CHIONE Desv.
21. communis Desv. . . . etc., and on page 288, the name "Ilione Hal." listed in the index between "Idioptera Macq." and "Ilithya 205.", and no other mention of *Ilione*. There is listed, on page 271, under Tetanocera Dum.: "*19. lineata Fall." I have also checked the first edition of Curtis' Guide (1827) and find no mention of the name *Ilione*. Collin's statement thus appears to be incorrect.

The next mention I find of *Ilione* is in Westwood (1840, Intr., v. 2, p. 146):" . . . and *Ilione* Hal. (*I. lineata* Hal.) are referred by Mr. Haliday to the genus Tetanocera." Then, in 1864, Schiner (Fauna Austr., v. 2, p. 61) cited "Ilione. Halid. pt." in synonymy under *Elgiva* Meigen and on page 63 cited "(Gatt. Ilione Halid.)" at the end of the paragraph of his key to Elgiva leading to the species *lineata* Fallén. Hendel (1901, Term. Füz., v. 24, p. 141) cited "*Ilione* Halid. (*cucularia* L. und *rufa* Panz.)" in a key to

"Tetanocerenformen." Hendel (Dec., 1902, Wien. Ent. Ztg., v. 21, p. 265) erected the genus *Hedroneura* in the statement: "Da dies (*Ilione*) aber ein blosser Katalogname ist,—er wird zum ersten Male in Curtis Guide, 2nd ed., pag. 280, ohne Beschreibung und Angabe einer typ. Art und dann in Westwood's 'Introd. to the Mod. Class. of Ins., Gen. Synops.', pag. 146 mit Beziehung auf *lineata* Hal., einer nirgends beschriebenen Art, erwähnt, so lasse ich ihn fallen und nenne diese Gattung mit Rücksicht auf die sesselförmig gebogene hintere Querader: *Hedroneura.*" This I would put into English as: Since this (*Ilione*) is a mere catalog name (it was cited for the first time in Curtis' Guide, 2nd ed., p. 280, without description or mention of a typical species and then in Westwood's Introd., p. 146, in connection with *lineata* Hal., a species nowhere described), I drop it and name this genus *Hedroneura,* with reference to the chair-shaped bend of the posterior crossvein.

From all this, it seems that *Ilione* was a nomen nudum until 1901, when Hendel referred the species *cucularia* L. and *rufa* Panzer to it. Schiner's mention of *Ilione* in synonymy makes that unavailable as first use under Article 11d of the latest Rules. Since Hendel assigned two species to *Ilione* without type-designation, it was still necessary to select one of the two as type. The only statement Hendel made in connection with the erection of *Hedroneura* and rejection of *Ilione* was: . . . "nahm ich für den Verwandtschaftskreis der *Tetanocera cucularia* L. den Gattungsnamen *Ilione* Hal. an [I accepted *Ilione* Hal. for the relationship-circle of *T. cucularia* L.]"

I selected *cucularia* in 1965 (*in Stone* et al., Cat. Dipt. Am. north of Mex., p. 690), at which time I also recognized *Hedroneura* as monotypic on *cucularia* L. because Hendel considered *Ilione* as a nomen nudum then and spoke of the relationship-circle of *T. cucularia* as the concept he was naming rather than speaking of erecting a replacement-name.

I concur with Verbeke (1964, *Bull. Inst. Roy. Sci. Nat. Belg.,* **40** [9], pp. 1-45) in these conclusions and accept the following as distinct genera:

Elgiva "Megerle" Meigen, 1838 (type by designation of Rondani, 1856: *cucularia* L.). Synonyms: *Ilione* Hendel, 1901 ex Haliday (type by designation of Steyskal, 1965: *cucularia* L.); *Hedroneura* Hendel, 1902 (type by monotype: *cucularia* L.).

Hydromya Robineau-Desvoidy, 1830 (type by designation of Hendel, 1901: *dorsalis* F.=*coeruleipennis* R.-D.).

Knutsonia Verbeke, 1964 (type by original designation: *albiseta Scopoli*).

The four species originally included in *Elgiva* by Meigen, together with their present assignments, are as follows:

aratoria F.=*Knutsonia albiseta* (Scopoli).
dorsalis F.=*Hydromya dorsalis* (F.).
lineata Fallén=*Knutsonia lineata* (Fallén).
cucularia L.=*Elgiva cucularia* (L.).

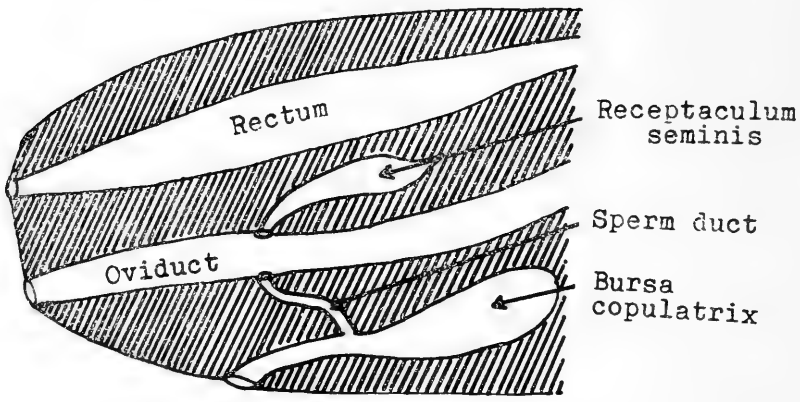
Concise determination tables for these genera and species are to be found in Knutson and Lyneborg (1965, Ent. Meddel., 34, pp. 61-101).

The Large Tortoiseshell Butterfly — I

By P. B. M. Allan

All it is intended to discuss in this article is the problem (for so I deem it to be) whether *Nymphalis polychloros* Linn. pairs in autumn or spring. All the modern books on our Rhopalocera—Newman, Barrett, South, Stokoe, Frohawk, Ford and the rest—assert, without any dubiety, that this species pairs in the spring, that is to say after hibernation. But none of them has produced any evidence of a pairing having been seen or obtained in captivity at that season. I, having an habitual dubiety where insects are concerned, suggest that the moderns are mistaken and I take my stand beside Westwood and those experienced field workers W. T. Bree and Joseph Merrin, with a somewhat diffident Tutt who nevertheless asserted that pairing can and does sometimes take place in the autumn and has recorded one or two instances of it.

But before I begin this heterodoxy something should be said about the anatomy of the Large Tortoiseshell butterfly in its imaginal stage; for unless I can bring forward irrefutable evidence that my heresy is possible I cannot hope to convert the orthodox believers.



The crude drawing above is a diagram of the ultimate abdominal somites of a female *N. polychloros*. What happens when the ♀ *N. polychloros* is fecundated by the male is this. The sperms are not implanted in the female in a free fluid but are enclosed in a bag-shaped membranous envelope called a 'spermatophore'. The spermatophore is deposited by the male in a pouch-like structure called the 'Bursa Copulatrix' underneath the female's Oviduct (*see diagram*).

In the neck of the spermatophore there is an opening through which the sperms escape. The spermatozoa pass, probably by means of their own motility, up a small duct into the Oviduct, and thence by another duct into another pouchlike structure called the 'Receptaculum Seminis'. Here the spermatozoa can remain alive for months, until the eggs are 'ripe' and begin to pass down the Oviduct.

As each egg in its passage down the Oviduct passes the opening of the duct of the receptaculum, a few spermatozoa enter the micropile of the egg; for each egg is oriented so that its micropile comes exactly opposite the entrance of the duct. Thus fertilization of the ovum is brought about.

This storing up of the spermatozoa by the female is a common condition in certain insects. In some of the Hemiptera the insects pair soon after emergence, long before the ovaries are developed (Wigglesworth), and in the Lepidoptera the sperms can remain alive in the receptaculum for several months (*idem*). In the honey-bee the sperms live for as long as five years after the female has once mated (Imms). As a general rule it can be said that there is not necessarily any coincidence between fecundation and fertilization of the eggs.

So if our ♀ *N. polychloros* pairs in July or August shortly after eclosion she can retain the spermatozoa in her receptaculum until her eggs are ripe in the following March or April, according to the earliness or lateness of the season. And this, I suggest, is the normal procedure with this butterfly in England. For what other purpose is the receptaculum? Why and how has it evolved if not for the purpose of storing up the spermatozoa during a period unfavourable to fertilization?

I once saw a butterfly pair before its wings were expanded. It was a Clouded Yellow (*Colias croceus* Fourcroy) and it was in East Herts. on 27th July 1949. While walking in a lucerne field where many Clouded Yellows were flying, something moving on a plant at my feet caught my eye. It was a *C. croceus* just emerged from the pupa-case and climbing up the lucerne plant to expand its wings. While I was crouching to watch it, a male flew close by. He turned at once, flew down to it—ignoring me—settled below it, oriented himself and they paired immediately. Her wings had only just begun to expand. When I returned a quarter of an hour or so later they were still in copulation and the female had expanded her wings. I know not whether this instance of pairing very shortly after eclosion was abnormal or whether it is the rule with *C. croceus**. It may or it may not be so, and since every species is *sui generis* it does not follow that what obtains with one butterfly obtains also with another, such as *N. polychloros*. But whichever way it is it does not affect my belief about the Large Tortoiseshell.

I seem to remember finding freshly emerged moths paired in my larva-cages on more than one occasion; but unhappily I made no note of this, presumably because I did not consider it to be unusual. Recently, however, I read an interesting note by Captain Charles Blomer in Loudon's *Magazine of Natural History* (**4**: 445) by which it appears that one of the Clearwing moths, *Sphecia bembeciformis* Hübn., pairs immediately upon eclosion. Examining the bole of a large poplar for moths, "on a close inspection I found a pair of the insects in a state of copulation. They had that moment escaped from the pupae, the empty cases of which were half protruding out of two of the small holes. I examined the above trees early every morning for some days after and collected about twenty; and I invariably observed, if the two sexes were on the same tree, they were always in a state of copulation". Oddly enough the last two specimens of this moth which I saw alive (on 20th July 1947) were in copulation and were shown to me by their captor, Mr. Geoffrey Dent, a few minutes

*My friend Mr. Derek Ashwell tells me that he has witnessed the same thing. Mr. J. H. Payne recorded in 1961 a similar experience with the Black Hairstreak (*Strymonidia pruni* L.): "I . . . . spotted a freshly emerged *S. pruni* looking still limp, hanging from a twig . . . . It was not long before a *pruni* . . . . fluttered in and copulation took place" (*Ent. Rec.*, **73**: 50).

after he had found them on a bole of sallow in Hatfield Forest, West Essex.

"Of course", someone might say, "it seems more *likely* that pairing should take place when a number of *polychloros* emerge from a batch of pupae near the elm on which their larvae had fed, and are all flying about together. Every day in the life of a butterfly is a day of risk, whether she is flying about or hibernating in a barn or hollow tree. In July, August and September she may become the prey of a *Crabro* or Asilid by day. By night, she may be devoured by one of the many nocturnal species of predacious beetles*. During hibernation she is exposed to the attacks of spiders, other tree-inhabiting arthropods, tree-creepers and woodpeckers. Why should nature expose *polychloros* to all these risks of extermination when by adopting the procedure normal with other butterflies the continuance of the species can be assured? Moreover, when the ♀ *polychloros* wakes up in the spring there may not be a male within a mile of her".

This is a pretty, and plausible, argument; but I reject it because it is fallacious. Nature is not solicitous for her offspring. The only road to salvation for every insect is evolution. In each stage of its embryological development it must adapt or adopt since each stage, egg, larva, pupa, imago, has predators special to that stage. Goodness knows a wide enough range of protective adaptations is possible for it. And even then only the most successful ones will survive to carry on the race. Nature does not tolerate failures. The species whose race lacks plasticity must go. There are always others ready to take one's place in the habitat. So a suggestion that it is more *likely* a freshly emerged butterfly should pair than an enfeebled one which has had to exist for months on its own fat-body is unsound biologically.

At first sight it would seem that the hibernation of *N. polychloros* has nothing to do with diapause, which of course is arrested development; for the imago is complete morphologically when it emerges from the pupa. Yet on eclosion it is not intrinsically complete because its ovaries are still undeveloped. So one cannot suggest that this butterfly hibernates only in order to survive the rigours of a British winter. It is not so simple as that. A long resting period is necessary for the ovarioles (the egg-tubes which together form the ovary and contain the eggs) of *N. polychloros* to develop.

Ford has pointed out (*Butterflies*, 1945, pp. 100-1) that the British butterflies "considered as a whole, can hibernate in any of their stages. Nine of them do as eggs, thirty-five as larvae, eleven as pupae, and seven as adults". What, then, is the reason why seven of our species hibernate as imagines?

It must be a matter of evolution. How it has come about we know not though we can guess. The fact that *N. polychloros* shares this character of hibernating in the imaginal stage with only six other butterflies which now occur in our islands suggests that these seven† have a different

*See an interesting paper on *Some Enemies of the Diurnal Lepidoptera* by C. Floersheim in *Ent. Rec.*, **18**: 36-39 (Feb. 1906, Pt. 2). A brief notice of that paper appeared in *Ent. Rec.*, vol. 68, at page 143 (May 1956).

†They all belong to the Fabrician genus *Vanessa*, viz. *io*, *atalanta*, *polychloros*, *urticae*, *antiopa*, *c-album*, *cardui*. These seven insects have so many structural characters in common as to suggest that they have evolved from a common archetype.

antecedent climatic history from the other fifty-one. It may be that these seven are aboriginals of the former continental territory of which the British Islands were once a part and that the others, all fifty-one of them, are parvenus. *N. polychloros* may have survived more than one Ice Age, resuming its occupation of our country whenever that territory showed signs of returning to normality and is taking a lengthy time to adapt itself to conditions which are not yet normal to it. The examples of autumnal pairing which I shall quote presently would seem to suggest this.

Things have altered so much for the worse since the climate of Northern Europe was a mild genial one that if the Large Tortoiseshell were to lay its eggs nowadays immediately after pairing in August, as once it probably did, the larvae would die of starvation before they were full-fed in October; for there are at least seven weeks between oviposition and pupation. And since 'survival of the fittest' is a universal law of this earth that is probably exactly what happened. The progeny of the individuals who continued to lay their eggs in autumn while the climate was deteriorating died out; the ones to survive were those who went into hibernation.

What caused some of them to go into hibernation? Why, I should think it was because they had spread to the limit of their range, a limit which for some reason they were unable to overpass, a limit where the climate lowered the rate of their metabolism and so caused lethargy in early autumn. So they, being the fittest to survive, slept through the winter in some sheltered spot and came out of hibernation in the spring, when they were able to produce their progeny with every chance of those progeny surviving. I don't think there is anything more recondite about the matter than that. And certainly it shows that a receptaculum is a very useful thing for a butterfly to possess.

• • •

It occasionally happens", wrote Westwood* in 1849, dealing with the Vanessids in general, "that some of these insects survive the winter, passing that period of the year in a state of lethargy. It has been generally supposed that these are females, which have been produced late in the preceding autumn, and which, although impregnated at that time, had not deposited their eggs, but waited until the renewal of the season brought forth a fresh supply of food for their offspring. M. Boisduval, however, opposes this, stating that these individuals had entered their lethargic state at a much earlier period (having observed *V. polychloros and urticae* in this state in August), and that their impregnation does not take place until the following spring. Mr. Brown also opposes the ordinary opinion . . . . founding his observations on the Lepidoptera of Switzerland. The Rev. W. T. Bree, however, whose practical knowledge of the subject renders his opinion of so much weight, opposes the statements of Mr. Brown, and supports the generally-received opinion . . . . ".

This opinion of Boisduval seems to have been adopted by most of the subsequent Continental authors—that is to say those who refer to the matter at all—and we can take it that his collaborators in the *Coll. Icon. et Hist. des Chen. d'Europe* (1832-37), namely Rambur and Graslin, agreed with him, no less than Guenée, who was part author of the *Spec. Général des Lép.* (1836-1874).

**Brit. Butt. and their Trans.*, 1849, p. 49.

Among some of the modern Continental authors whose books I have consulted there is no unanimity about the voltinism of this insect. Frank Bromilow, who lived at Nice, was of opinion* that *N. polychloros* was double brooded in that part of Europe and that although "sometimes in bright weather hybernated specimens may be seen on the wing" there were two broods, one in March-May and the other in July-September. This was contrary to Tutt's view, who wrote (*Ent. Rec.*, **19**: 252): "I know of no record of a brood occurring in South Europe and North Africa in August and September, but the emergence of the imagines in June (Cannes) and May (Algeria) suggests that a partial second brood might be successful in these districts and that the occasional attempt of some specimens to produce one in Britain denotes the remnant of an old double-brooded habit in the species".

Gélin and Lucas (*Cat. des Lép. Observées dans l'Ouest de France*, Niort, 1911, p. 128) also mentioned two broods, June-July and August-September, adding that after hibernation it re-appears "in numbers" in April-May. These authors are more exact than most and evidently studied the generations of the Vanessids. Of *Nymphalis io* L. they wrote (p. 128): "7-9; hiverne et reparait en avril; parfois une génération en 5-6, provenant de chrys. ayant hiverné". Of *Vanessa atalanta* L. (p. 127): "5-6, 9-10; hiverne comme papillon, plus rarement comme chrysalides; les papillons reparaissent en mars-mai, les chrysalides hivernées éclosent en mai-juin. La génération de septembre est la plus abondante".

Oberthür (*Faune Ent. Armoric: Lép. Rhopal., Rennes*, 1912-21, p. 100) merely remarks that the larvae are to be found from May to September and the imago likewise occurs during those months. He says nothing about hibernation either of larva or imago. Roger Verity (*Ent. Rec.*, **31**: 141-8, in an article titled 'The various modes of Emergence and the Number of Annual Broods of the . . . . Rhopalocera of Southern Europe, illustrated by the Tuscan species') wrote that in Tuscany there are two broods of *N. polychloros*: the first from June to 15th July; the second from September to March. "Seitz only attributes one brood both to *polychloros* and to *antiopa*; in the south the former certainly has two . . . . " (p. 145). "*Eugonia polychloros* emerges from the end of June to 15th July, and the II gen. emerges in a very graduated way during the whole winter from September onward, but chiefly in February and in the early half of March" (p. 146). "During the winter, when a few mild days occur, a few *croceus* . . . . together with *polychloros*, which is our winter butterfly par excellence" (p. 148).

Millière also was of opinion that *N. polychloros* has two broods, the first in March, the second in June; and he added "Often in winter one sees specimens . . . . flying in the sunshine, but these have passed the bad weather hidden in the hollow of a tree or in the fissure of a rock". Tutt, pouncing on this (*Ent. Rec.*, **19**: 252), considered that Millière's March generation were only hibernators, since in England "we get no freshly emerged specimens until July". But Millière was a good entomologist: he lived at Cannes, where he printed (1874-5) his Catalogue Raisonné of the Lepidoptera of Alpes Maritimes and his *Lépidoptérologie* (1879-82). He knew the Lepidoptera of southern France a good deal better than Tutt did.

**Butterflies of the Riviera.* Nice, 1893, p. 57.

As regards evidence of *N. polychloros* pairing in the spring the orthodox believers will be annoyed to hear that although I have searched the 99 volumes of *Entomologist* (1864-1965) and 77 volumes of *Entomologist's Record and Journal of Variation* (1891-1964) (covering a hundred and two years)*, all the well-known works on the British Rhopalocera from Westwood to Ford, and some dozen French works published during this last half-century, I have found only a single record of it and I am doubtful about even that one. Perhaps some of our readers will be more successful than I have been. (Continental records will not affect my argument for I am writing of the English race of this butterfly.)

Here is the only English record I have found which supports the dogma of the orthodox believers. In *Entomologist* of 1894 (**27**: 195) South printed an interesting note by J. H. Fowler on the spring appearance of *N. polychloros* in the New Forest. One sentence in it is of particular interest in this matter of the pairing of this butterfly. It was as follows:— "March 23rd, about a mile west of Boldrewood, in a narrow riding, I came across two fine birch-trees amongst oaks and firs, and upon these birches I saw a large assembly of *V. polychloros*: I counted above twenty-five, and upon the bare branches there were several pairs *in cop.* their dark wings being quite visible . . . . ".

John Henry Fowler died in 1903 at the age of 47. There is an obituary of him by his friend G. B. Corbin in *Entomologist,* vol. 36, at page 272. He lived at Ringwood on the fringe of the New Forest and was a cashier in a bank in that town. Corbin testified to "his keen powers of observation and perception . . . . whilst, as a worker in the field, few collectors were more expert and assiduous". So there can be no question of the substance of this note about this "large assembly of *V. polychloros*" which he reported to South, the then Editor of *Entomologist.*

Yet somehow I feel in my bones that Fowler may have been mistaken in one small detail—the "several pairs *in cop.*" upon "the bare branches" of "two fine birch trees" which he saw. A 'fine birch tree' would have been perhaps 40 feet high—the *Ency. Brit.* gives 40 to 50 feet and John's *Forest Trees* up to 50 feet. If the day was a bright sunny one, as presumably it was since the butterflies were all active, the lights and shades cast by the surrounding oaks and firs—and the upper branches of forest trees are usually astir with even a light breeze in March—and the swaying of the thin terminal twigs of the two tall birches all a-quiver in even a zephyr, might have made the appearance of the "dark wings" which Fowler said were visible to him, while standing on the ground and looking up at the sky, somewhat confusing. So that one butterfly immediately behind another though actually six inches farther away from it, might resemble a pair in cop. Moreover on two trees perhaps 40 feet high it might be rather difficult to distinguish several pairs in cop. in an assemblage of twenty-five all moving about and in various positions on the swaying branches.

I know this sounds captious of me, but more than once during a long life my eyes have deceived me and it may be that Fowler, best of good

*I do not mention the *Ent. mon. Mag.* (or *Entomologist's mon. Mag.* as we must now call it) because my set of it is incomplete. But I have searched a good many of the older issues.

fellows, was also mistaken in the interpretation of what he saw. At least I can claim good company here. "In the course of my experience", wrote the Astronomer Royal (Sir H. Spencer Jones, F.R.S.), "I have come across so many instances of the unreliability of ocular evidence that I prefer to seek a natural explanation"*.

Next month, with the Editor's permission, I shall say something about autumn pairings which have been observed.

*_The Spectator_, 15th December 1950, page 686, col. 2. Probably there is not a professional scientist in this country to-day who would not agree with me if I said that *jumping to conclusions* is the deadliest, numbing, incubus that can afflict a science. How terribly it can mislead, how many precious hours it can waste! Copying from a previous writer without confirming is another incubus.

(To be continued.)

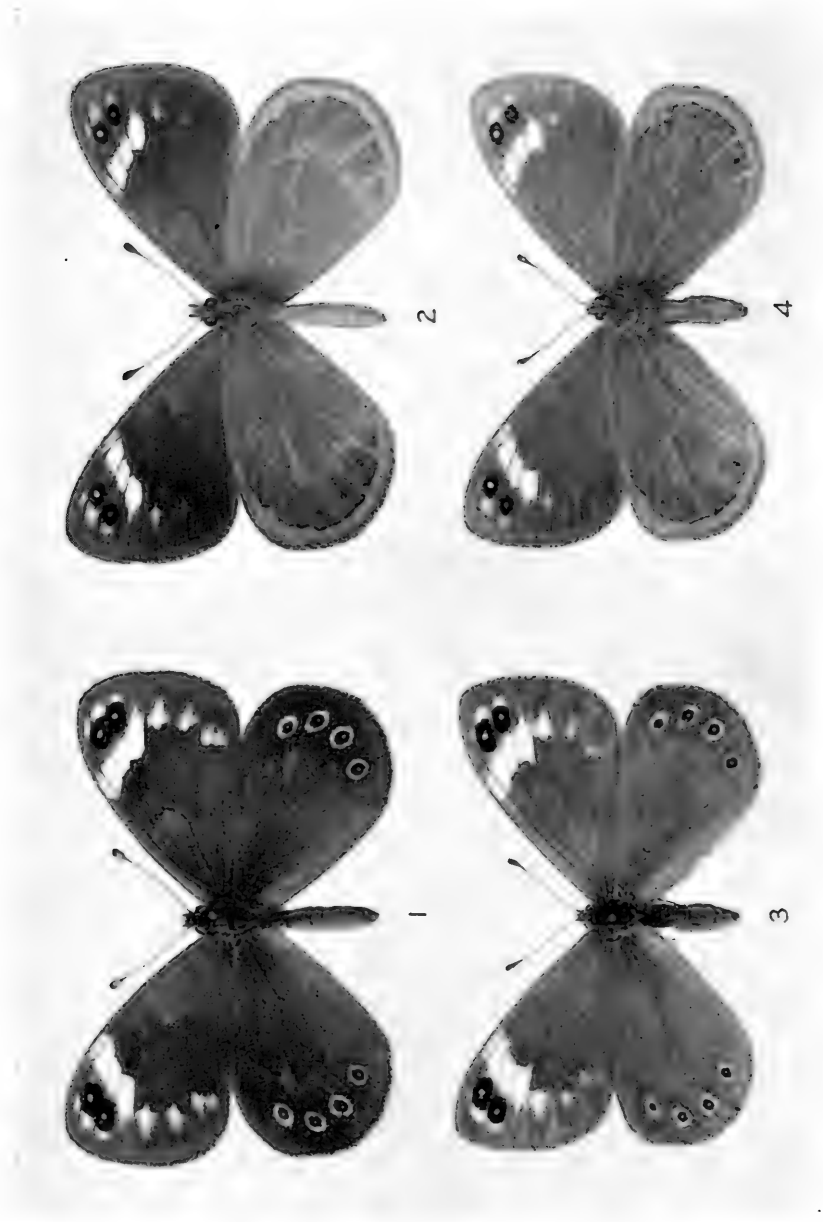
Notes on the Cape Satyrid butterfly *Torynesis mintha* (Geyer) with a description of a new race

By C. G. C. Dickson

Once considered to be a very scarce butterfly in the S.W. Cape, *Torynesis mintha* is in fact far from uncommon though localised in its occurrence. It is difficult to give any explanation as to why it was not encountered to a greater extent in Trimen's day, even if allowance is made for the generally less easy access to localities then and the limited flight-period of the butterfly—during part of the autumn only. A little over thirty years ago it became apparent that the typical race flew in many spots close to Cape Town and in some cases within easy walking distance of the town itself. The late P. R. Robertson and the writer first came across it in numbers at Durbanville, some 15 miles N.E. of Cape Town, on 24th March, 1934. Considerably earlier, the late D. K. H. Barnard took specimens of a variation of *T. mintha* high up in the Great Winter Hoek Mountains, these examples being in the collection of the South African Museum. Very much earlier (April, 1905), the late Gowan C. Clark was aware of its occurrence at Hout Bay, in the Cape Peninsula.

From specimens collected by the writer in many localities, mainly mountainous ones, between Cape Town and Worcester, as well as to the N.W. and S.E. of the intervening country, it has been found that the butterfly can be more or less transitional in appearance between the races *mintha mintha* Geyer and *mintha magna* van Son, but this aspect requires careful and detailed study. Examples taken near Worcester are, in fact, quite close in many cases to what appears to be a rather smaller than usual variation of *mintha magna* from W. of Matjesfontein, while some specimens found much nearer to Cape Town, even ones from the Simon's Berg, can bear a close resemblance to Worcester examples. There are certainly clear breaks between many of the populations in the stretch of country between Cape Town and Matjesfontein. It is of interest that specimens even from some localities far from those of *magna* proper should often have the subapical bar of the forewing upperside very pale, almost white.

**Dira mintha* Geyer, Zutr. Samml. Exot. Schmett., 5th Cent., p. 15, n. 426, ff. 851-852 (1837).



Torynesis mintha piquetbergensis subsp. nov.

Fig. 1. ♂ Holotype (upperside). Fig. 2. ♂ Holotype (underside).
Fig. 3. ♀ Allotype (upperside). Fig. 4. ♀ Allotype (underside).

Figures approximately natural size.

N.B.—Tips of forewings appear too rounded in fig. 1 owing to downward curvature of wings.

Photo : H. N. Wykeham.

Samples of *T. mintha* of a rather striking form, with the subapical yellow bar on the forewing more prominent than in most Cape Peninsula specimens, were found at Rooi Els (a new locality for this butterfly, near Cape Hangklip), on 29th March, 1967. These individuals were flying over uneven sandy ground close to and only just above the sea. The butterfly was found, in a large form (and with the subapical bar yellowish), at the Breede River Bridge, near Swellendam, many years previously.

The larva of *T. mintha* is believed to aestivate in the final instar during the dry summer months (as in the case of *Dira clytus* (L.)), with pupation taking place some weeks before the imago is due to appear, in the autumn.

It was suspected that a rather low, rounded hill 2 miles N.E. of Moorreesburg, far removed from the then nearest known locality for *T. mintha* and on which the grass *Danthonia*, with which the butterfly is always associated, was present in abundance, would yield a new race of *mintha*. This indeed proved to be the case, within a few minutes of pulling up at the roadside and investigating this hill, on 22nd April, 1965.

Later in the day the same race was found at the southern end of the Piquetberg mountain, 18 miles N. of the first locality.

Torynesis mintha piquetbergensis subsp. nov.

A race of rather greater average size than *T. mintha mintha* from the Cape Peninsula and its more immediate neighbourhood, in which the upperside, as a whole, tends to be less dark, with the subapical light-yellow bar on the upperside of the forewing usually distinctly broader, and the underside of the hindwing either largely unicolourous or more obscurely marked than in nominate race. The specimens selected as the holotype and allotype lack any darker main pattern on the hindwing underside.

Male. Upperside.

Forewing. The broader subapical bar almost consistently of as light a yellow as in lighter-marked nominate specimens.

Hindwing. Rings of the subapical ocelli, more often than in the nominate race, pale yellow.

Underside.

Forewing. The yellow bar somewhat broader than in nominate race; no third, upper, much reduced ocellus—or, when present, barely apparent. Silver-grey colouring parallel with and close to the margin (mainly towards the apex) much broader than in nominate race; this colouring obscure in some specimens but generally distinct, though not as light as the corresponding scaling in nominate race and frequently with a slightly violet-blue tone.

Hindwing. Almost plain, lightish brown or grey-brown, with a dark-brown sub-marginal line bordered outwardly (usually broadly, and nearly always far more broadly than in nominate race) with silver-grey similar to that near apex in forewing; or with the veining and light discal streak silver-grey (of the same tone as the border and not as light and conspicuous as in nominate race) and the darker pattern, in many specimens, also more or less developed, but usually far less prominent than in nominate race. Submarginal ocelli normally greatly reduced in size, and without well defined encircling rings even in the better marked specimens.

Length of forewing: 25.25-28.75 mm. (27.5 mm. in holotype).

Female. Upperside.

Of a less dark brown than the male.

Forewing. As in male, allowing for general variation in specimens.

Hindwing. On the whole, as in male.

Underside.

Forewing. Like that of male and devoid of a third, small upper ocellus (or with only the slightest indication of one).

Hindwing. Similar to that of male; in one specimen examined the ocelli rather more prominent than usual.

Length of forewing: 26-28 mm. (26 mm., in allotype).

♂ Holotype, Cape Province: hill 2 miles N.E. of Moorreesburg, 29.iv.1967 (C. G. C. Dickson); British Museum Reg. No. Rh. 18554.

♀ Allotype, data as holotype; British Museum Reg. No. Rh. 18555.

Paratypes presented to British Museum (Natural History), Cape Province: as holotype, 22.iv.1965, 9 ♂♂; Sthn. end of Piquetberg Mtn., 22.iv.1965 (C.G.C.D.), 3 ♂♂ 1 ♀.

Paratypes in the author's collection, Cape Province: as holotype, 22.iv.1965, 7 ♂♂, 1 ♀; Sthn. end of Piquetberg Mtn., 22.iv.1965 (C.G.C.D.), 1 ♂,1 ♀.

Further paratypes as follows: Coll. Transvaal Museum, as holotype, 22.iv.1965 (C.G.C.D.), 2 ♂♂.

Both sexes vary greatly, as in the nominate race, in the degree of development of the fulvous colouring (or, in a few examples, more or less yellowish colouring) of the upperside. The minute, third upper pupil of the ocellate marking of the forewing upperside which is so often present in the nominate race, is normally absent in this race. Some specimens which are found are much below the average size.

The valve of the male genitalia is, in certain respects, closer to that of *T. mintha magna* than that of *T. mintha mintha*, without being as elongated as the former.

In its habits *T. mintha piquetbergensis* much resembles the nominate race. While not by any means rapid, the flight is a little stronger than, for instance, the flight of *Dira clytus* (L.) and the wing-beats less tremulous—to use Trimen's expression when referring to the latter species. When conditions are favourable the males, anyway, remain on the wing for prolonged periods, flying irregularly over the uneven ground on which the large tussocks of *Danthonia* grass are growing. The flight can become temporarily quite rapid if a specimen becomes alarmed, as when it is missed by the net.

The butterfly, which is single-brooded, has not been found as early as the middle of April (when searched for on the 14th of the month) but has been out in abundance on the 22nd, if there have been good autumn rains. The flight-period is short but would appear to extend well into May.

This butterfly has been referred to in an earlier short note by the present writer (Ent. Rec., **77**: 239). The nominate race and sub-species *magna* are both included in Dr. G. van Son's work, "The Butterflies of Southern Africa," Pt. II, pp. 77-79, Pls. III-IV, figs. 37-38 (1955), and interesting observations on the two races are given by Swanepoel in "Butterflies of South Africa", p. 254, Pl. XIV, figs. 25-27 (1953).

"Blencathra", Cambridge Avenue, St. Michael's Estate, Cape Town.

Trinidad, October - December 1966

By T. J. G. Homer, M.A., A.M.Inst.T.

In January 1965 I left by ship on a trip to the West Indies. I chose that time of the year to enable me to be clear of this country during the worst winter months and, in addition to a cruise up the Windward and Leeward Islands, I was fortunate in being able to accept the kind hospitality of a cousin in the domestic estate of the huge Texaco Oil Company's refinery at Pointe-a-Pierre, Trinidad, 35 miles South of Port of Spain and about half-way down the West coast of the Island.

Although I was aware of this dry season being unsuitable for entomology, I took with me some equipment and was able to collect and set about 150 specimens including 43 species of butterflies.

As another opportunity of visiting Trinidad presented itself, I made arrangements to sail on one of Elders & Fyffe's two large 'banana boats', the 'Camito', arriving at Port of Spain on 14th October 1966. I was to be out there until Christmas, staying again with my cousin, and had the last ten weeks of the wet season at my disposal, believing insects to be constantly brooded until the end of my stay and bearing in mind that I should at least be able to finish with a flourish when the 'Christmas Bush' should behave in its customary manner and its flowers act as a final and strong butterfly attractant.

Having worked on two misconceptions, I arrived to experience the wettest October and November known to my cousin during his twenty-one years of residence only to discover that the bulk of the lepidoptera tended towards two broods and that the second one due in September was fast declining. Whilst a lesser third brood might be expected in December I did not realise that the 'Christmas Bush' blooms in September, and all I found on arrival were its dead flowers. Furthermore, I was not prepared despite the torrential rain to spend two months of nights ideal for an astronomer and never was a blanket of cloud to be seen. Over the whole period the number of moths I ever saw in the car headlights on any one night could be counted on one hand. It should be easy to deduce from this that well intentioned information gathered from various sources can be grossly misleading and I advise those considering a long journey to be very careful indeed on collecting facts. I always feel that much written material dwells too little on collecting conditions even in our own islands and vital matters regarding fronts, temperatures, cloud cover and insect reactions in varying habitats is often lacking yet so vital to prospective travellers.

We are told that Trinidad boasts 600 species of butterflies. Short of reliable evidence I have obtained both there and here at home, a tourist having been to the Island even with the eyes of an entomologist would regard the information as a myth. Despite, however, views to the contrary owing it is said to the 'stability' of the North East Trade Winds, I much suspect the presence of strays from the South American continent obtaining a short-lived lodgment of a few generations to be largely responsible for many of the number stated. Trinidad being only 11° North is in a vulnerable position in respect of atmospheric disturbances within the 'Trades' and the ascent of insects with heated air into the upper atmosphere must have played an important role in swelling the Island's 'list'.

I was fortunate in having at my disposal a Morris 1100 belonging to the family, a handy vehicle on the congested and often indifferent roads

and amongst cars and lorries handled in a rather haphazard manner. The nominal imposition of a 50 m.p.h. speed limit however acted as a useful brake on some rather exuberant drivers. I thought however that the standard of driving had improved since my previous visit. The ground clearance of the Morris was none too good but this disadvantage was countered by a network of roads in the forested oilfields where most of my collecting was done and I found from experience that a coconut husk could just be cleared!

The weather pattern generally became a known quantity. It may rain all day but following the invariable clear night the mornings usually start sunny and the shade temperature is soon in the uppper 80's, the difference between night and day being about 10°F. The humidity was also in the 80's. During the morning cloud builds from the East and at any time from about 11.30 a.m. to 2.0 p.m. the deluge will commence. One is not taken unawares as the approach of rain can be heard from some way off and the drill is to have the car handy. Thunder and lightning is the usual accompaniment. It would normally get dull by 3.30 p.m., about when the rain has ceased, and tea soon after 4.0 p.m. is the rule on the verandah. It follows from the foregoing that the collector must be on his site by 8.30 a.m. at the latest and should rain keep off till after midday, with the heat, lack of air in the forest clearings and the high humidity he has probably had enough when at last rained off. It follows also that butterflies having been under cover for so long have only a few hours to feed first and then play. Consequently the earlier the collector is active much greater are his chances when the insects are feeding initially and in a more torpid state than an hour or so later in the morning.

I was living in that part of the Island which formed the centre of the sugar cane industry but about twelve miles to the South one comes upon forest which, except for some ribband citrus and coco planting, continues across the island and down to the South coast. Beneath the deeply furrowed forest lies the Trinidad oil and so the collector has the luxury of diving deep into the otherwise impenetrable district over a network of roads as every oil well with its pump and derrick has to be approachable by heavy vehiclees, furthermore as wells are frequently several hundred yards apart, out of line and deep in gullies, lesser roads off the main arteries to them are essential. The oil companies have kept the verges clear but so rapid is the growth on the forest edges that lantana, asclepias, black sage and other shrubs and flowers furnish the valuable lure to insects. Whilst the use of the ubiquitous cutlass aids entrance to the forest floor, I found the following of one of the many pipe lines a useful method. Unlike the forest of the Northern Range, that of the South was on relatively low ground but it was clothing uneven country with the constant alternation of ridge and ravine, the roads often following the ridges, and leaving the roads on foot may result in one being submerged in the thick jungle undergrowth on steep slopes at the edge of the forest clearings.

My usual collecting ground was in two nearly adjacent oil-fields owned by the Texaco Company. They lie about twenty miles to the South of Point-a-Pierre between the Southern Highway South of the pitch lake and the town of Fyzabad some miles further East. They are known as Cruse Field and Forest Reserve, the latter being controlled and manned

night and day by the oil company's private police. At each gate there is a small guard hut, illuminated all night and on which moths can be found settled in the mornings. The presence of a constable would tend to keep marauding birds from what would otherwise be a splendid breakfast! On a moth collecting expedition at the correct time of the year results should be astonishing. I am told by constables that at times moths are so troublesome that there is difficulty in keeping written records of passing vehicles into and out of the estate. Two of the three posts are about three miles inside the forest and a plug-in for a m.v. light with a negro constable at one's side is a luxury that is not to be bettered. I could get no suitable evidence of when moths came except that it was usually with rain. On the night of 8th November I made a pilgrimage to the Reserve. The family bade me farewell, saying that whilst they hoped for my success it was nice to have known me! Actually, one of the constables only a few weeks previously had placed his hand on a scorpion whilst taking hold of the top bar of one of the 'Reserve' gates to allow through a vehicle and was dead by the early hours of the morning. He may have been as alergic to the serum as vulnerable to the bite. I was treated to a tropical storm en route but on arrival at Fyzabad I found that there had been no rain. I was at the guard hut from 8.0 p.m. to 11.0 p.m. and despite the presence of a strip light only two moths arrived, one fortunately being a fine Saturnid. The end of May, June and September are the probable months for night work but I remain perplexed about the nature of suitable nights.

The staff of the Forest Reserve Field lived in quarters within the gated area and boasted an excellent club with bar, showers, and bathing pool. I wore standard rubber boots so that I could plunge with greater ease and more confidence into the undergrowth and at the same time saving trousers becoming covered from knee downwards with pernicious seed pods. Fifteen minutes after commencing operations I was usually soaked about down to my knees with perspiration. The wearing of a vest was of no assistance and merely increased discomfort. I found in practice that all I needed for sustenance at midday was one sandwich and a quart and a half liquid with further topping up back at the club. To be able to shower and bathe, change and obtain refreshment each afternoon prior to driving home was another luxury not ordinarily to be expected in such rewarding but otherwise wild country.

Subject to other arrangements not connected with lepidoptera, I deferred my decision on what to do for the day until about 6.30 a.m. A clear sky to the West indicated that there would be at least a short period for collecting and if it was black to the South a trip to the forest would be best deferred and I then relied on local collecting in 'bush' on the estate. If on the other hand I had been South the previous day I worked locally until or unless rain came, caught up with my setting and prepared for the morrow with a siesta which for the first time in my life came to me with ease. I would add that an air-conditioned bedroom made setting a less arduous task and an aid in the preservation of set specimens which could and indeed had to be removed from my setting cases in under a week to make way for further catches.

During my first visit to Trinidad I had the pleasure of meeting Mr. Malcolm Barcant. That veteran lepidopterist of Trinidad, indeed of Brazil and the West Indies, Mr. W. J. Kaye to whom I was kindly intro-

duced by Dr. Charles de Worms had already whetted my appetite by showing me his own fine collection at Guildford and as is well known he is one of the pioneers in the history of the Island's collecting and his publications are of immense value. He it was that let Malcolm in for my call at the latter's office in Port of Spain and subsequently I have had many happy hours with him either collecting or browsing over his collection of all but a handfull of the 600 Trinidad species gathered together over the past 40 years, indeed he has added more to the Island's list. Mr. and Mrs. Barcant made me most welcome and were to play an important part in guiding me to the right places, in the correct ways of collecting and in making my stay generally enjoyable. Needless to say Malcolm, now the leading authority on the Island's Rhopalocera, is well qualified to prepare the up-to-date and much needed work which is to be published by 'Collins' towards the end of the year, my only complaint being that I was on the scene prior to the arrival of the book. Limited as he was by calls of business and absence from the Island I was fortunate in being able to collect with him on this last trip twice in the Northern Range, once in the oilfield at West Trinity and accompanied by his wife we all stayed together at the Atlantis Beach Hotel, a small hotel overlooking the fine East Coast beach at Mayaro and about 12 miles from the South Eastern tip of the Island round which Columbus sailed during his third voyage in 1498. The Barcants remained at Mayaro for five days and I stayed on for another two.

Prior to this last mentioned trip I had been steadily building up the number of species and at the same time learning the hard way not only on how fast one has to strike with the net to get the insects into the bag but with what speed the frame has to be turned to prevent a lightning escape. It was not unusual to find no butterfly in the net to remove after what seemed a perfect catch. However the numbers and quality of *Papilios and Heliconids* began to mount and I learnt the need for patience when pretending to be a bush at the side of a wellflowered *lantana* until the quarry came within reach. I would add that I found a long handle quite essential for effective netting as the butterflies in such heat were highly sensitive and alert and many species sipped and flitted on too fast to aim and strike. I would mention in particular *Papilio polydamas* which made its appearance regularly though uncommonly in the two oilfields later in my stay. I watched my first male for a long period skimming over a sea of high pink flowers into the midst of which I worked my way. To strike and miss was fatal, as thereafter the spot would be declared 'black'. Ultimately, I struck and missed but the creature at the critical moment 'zigged' the wrong way and was caught in the shallow reverse side of the net as I drew back the frame. The second occasion involved waiting at *lantana* for a long time but the insect selected every flower except the ones I was at. A movement from me and it would have been gone. It was still early but light rain began to fall and yet *polydamas* fed. Then the heavens opened, and I presumed it would make for the thick tall bushes nearby. Instead it settled quietly on a leaf of the *asclepias* at which it was feeding. This time I was also drenched with rain by the time the catch was secured. The other *Papilios* were none too difficult though *Papilio thoas nealces* had usually suffered previously with broken tails and most had to be discarded. The beautiful *Papilio sesostris,* not to be taken in the North, was common and the elegant *Battus belus varus* appeared feeding not infrequently at a tall bush known

as Black Sage. Four *Danaids* were well in evidence and ten species of *Heliconids.* Cruse Field provided me with a nice male *Parcella amarynthina* Feld. which I was pleased to give Malcolm to replace his only very worn one. I took there also a fine blue Hairstreak *Thecla laudonia* Hew. which is not in the Trinidad list though there are two from the Northern Range in the collection at Tring.

I arrived ahead of the Barcants at the Atlantis Beach Hotel on 17th November, complete with a breeding cage containing pupae of *P. anchisiades,* one of the black *Papilios* and which resulted from typical brown larvae my cousin spotted camouflaged against the bark of one of his citrus trees, and others I found in a more immature state congregated en masse on the underside of a citrus leaf and gaining protection by their appearance of a nasty slimy mass. They all came through. The situation of the hotel was ideal by the fine beach from which we could watch fish netted each morning, helpers being provided with one fish each for assistance rendered. There it was that I found sand flies decidedly troublesome. We were in the coastal coconut belt, cooled—a relative term—by the trade winds and the forest on steeply undulating terrain commenced about a mile inland. On this coast there seemed to be a tendency for more sun than inland, whence I had come, with the result that we had longer daily collecting periods.

The initial excitement on the first morning was the appearance of a female *Hypolimnas missipus.* Several were seen but they were going over. They were none too difficult to catch but not worth keeping. We then proceeded to a marshy place to the North in a coconut grove close to the sea and collected in, I believe, its only habitat in the Island the attractive little *Helicopis cupido* Linn. They were very confined though common and in mint condition and except for the marshy conditions their collection reminded me from their easy flight of the gathering of *L. sinapis* in Salcey Forest. I was able to use my glass-bottomed boxes to help in the transfer of a supply of these delicate cream and gold multi-tailed creatures to an alternative site elsewhere where it is hoped they will maintain themselves as their habitat is threatened with development.

Driving two miles South we turned West into Maloney Road, narrow but well surfaced, which led up out of the coconut belt through intermediate scrub onto a long ridge in the forest a mile distant. Along here, after parking the car under a mango tree whose fallen fruits act as a strong attractant in June, we were treated to a sight of eleven species of *Heliconids* feeding freely on *lantana.* This was the finest show of butterflies I have yet to see. There were the contrasting brick reds of *Dryas julia, Agraulis vanillae, Dione juno* and *H. aliphera,* the brown of *H. isabella,* the blue, black and yellow of *H. sara,* the yellow, black and red of *H. ricini,* and the red and black of *H. erato* and *H. melpomone.* Also not unlike *H. isabella* in general appearance were many *Mechanitis veritabilis.* At this stage the first *H. doris* had turned up, one of the most beautiful butterflies in Trinidad. Here and there we were greeted with the crackling flight of the mottled grey *Hamadryas feronia* as it played with its pals, finally to settle head down with its wings spread and pressed down against the colour protecting bark of the trunk of a tree.

On another ridge along which we had to move on foot I had my second tantalising look at a *Prepona* and some green and cream *Metamorpho dido* flying high and alas with no bait with which to tempt them

to within range. After extracting from my net a fine pair of *P. thoas* in cop, a voice behind me said 'there's a King Cracker'—*Hamadryas amphinome*. It had settled head down on a tree trunk and was in fresh condition. I had not seen a live one previously and was not to know I was not to see another. Malcolm had previously shown me the method of catching butterflies settled in such a way, to strike diagonally from above where the net is less likely to be seen and catch the tree trunk with a very slightly glancing blow. The insect is then caught in the net with the follow through and as it takes to flight. The operation, admittedly effected very nervously, seemed to me to work like a charm on striking. As I stooped to remove the capture came the voice from behind 'You were lucky to get that one'! The onlooker sees most of the game!

On the second day we drove South through coconut plantation and after an unsuccessful look at the bush on the isthmus terminating in Galeota Point, the South East corner of the Island, we continued West along the South Coast to the Texaco oilfield of Guayaguayare. Near some employees' houses we made our way on foot to a small group of mangos where there were a number of cryptically marked butterflies which also settled head downwards, but with wings vertically, on the bark of trees. And so at last after a wait of 18 months when I saw my first 'Zebra' in the Northern Range, this *Colobura dirce* was to be added to my list. Then, squelching into a narrow trace in the forest, I was shown, rotting in the mud and amongst sticks, saplings and decomposing leaves, the large fruits from a very tall tree from India known as the Juniper. Very soon in the poor light Malcolm to the van had netted a huge Owl butterfly, *Caligo eurilochus* Kaye, the largest species in the Island, and I had got a *Morpho peleides insularis*. There were quite a number of these insects about, particularly the *Caligos*, but slipping and the sucking noises of boots in the soft mud and the cramped conditions preventing the effective use of a net made capturing a difficult task. Later we tried a gravel drive flanked each side by Texaco coco and coffee plantation. We noticed *Morphos* at a spot by the coffee and also a pungent smell of fermenting leaves. We subsequently obtained some of the *Morphos* but though there were *Preponas* about only two were interested and Malcolm caught one which was unfortunately badly damaged.

It was during my stay at Mayaro that surprise was expressed at my not having been protected against Yellow Fever. The Island is officially clear of the disease though a number I spoke to subsequently at the oil companies had been innoculated following an outbreak in the early 50's affecting two hunters in the Northern Range. I gather that at about that time a number of bodies of the Red Howler Monkey were found and the verdict was death from this disease. In view of this, whilst the urban areas are known to be clear, one never knows when an outbreak might occur and spread initially through monkeys and thence to man in the fastnesses of the forested areas. My feelings then may well be imagined when revisiting the trace and Juniper fruits at Guayaguayare several days later and missing my spectacles not noticed at the time but when battling immediately afterwards with a large *Caligo*. Groping on the murky forest floor and feeling around amongst rotting fruit, leaves and sticks on the soft mud and at the same time attracting the most attentive mosquitoes in the opening amongst the saplings where the *Caligo* at first escaped and where I thought the spectacles might have fallen was an

experience only to be appreciated when the lost equipment was found yards ahead, when I was back in sunlight and well after the event. On another occasion, despite the improbability of infection, I will certainly for my own peace of mind be innoculated.

Following my experience with the spectacles, I tried the tree trunk glancing method on a few 'Zebras'. All but one were too worn to be worth taking and I broke my cane net frame into the bargain. One tree the 'Zebras' loved owing to the oozing sap from a wound could not be trifled with as it was one of the many with bark carrying wicked thorn-like projections, horrible trees to fall against and the sharp points must have been quite half an inch in length. Assistance from a friendly police corporal I knew living in one of the houses nearby and who had pliers handy enabled me to mend the net frame. After refreshment, I collected half a dozen Juniper fruits, into whose surfaces my fingers sank, and conveyed them by car to the open gravel drive where the original coffee leaf smell had now disappeared. The fruit which I made into a paste was left on the gravel for a short while and though my hopes for a *Prepona* were not fulfilled, within five minutes of my return I watched settle and captured as many *Morphos.* A damaged one was released yet kept returning and so on that occasion I appeared to have attracted the lot in the immediate vicinity. Two *Morphos* twice in a net at one strike is an experience I shall never forget. On the way back to the hotel I looked in at the first stop in Maloney Road and secured my first male *H. missipus.* I also learnt by a near miss to avoid collecting under coconuts! I finally returned to the family a bit jaded after seven days consecutive collecting in good weather and was in fact forced back then as I had run out of setting boards, indeed my surplus in excess of cases had been standing on cups set in soup plates of water to keep specimens safe from ants. Not the least of my troubles, apparent also in England, is the inadequacy of the standard setting board. The provision of the same depth for pin and body in respect of a 5″ and 6″ wide board as is nicely adequate for a 2″ board is just not good enough even for U.K. Hawk Moths. My most useful board was a standard 5″ with a series of holes drilled centrally in the wooden base to take more pin and an additional strip of table mat cork fitted to provide for body depth. I respectfully suggest this be given serious consideration by suppliers.

I visited Mayaro again on 5th December for two nights. On the first morning I had to set my *P. homothoas* which I had found as a young larva on citrus and which had emerged the previous day at home. It was then that I found that my plastic box with all my setting equipment and stainless steel pins had been stolen the night before and probably while I was at the evening meal. The room was locked and windows barred but a hand from the balcony to which the external staircase came could have just been able to reach the innocent looking box left on the table within. Fortunately my setting pins were just out of reach and I still happened to have in a pocket of my suitcase a box of black enamel pins pushed in there as a last minute afterthought just before leaving the U.K. Also I had a spare pair of forceps in my haversack. After this shock I went some way along Maloney Road and was somewhat appeased by coming upon a fine freshly emerged colony of *H. doris,* including a few with the green instead of red markings on the underwings. The following day I took my third species of *Caligo* at Guayaguayare.

On my original visit to Trinidad I dropped and broke my cyanide bottle. This time I not only brought a spare but protected the glass exterior with hockey stick plaster. On one occasion whilst collecting locally I was intrigued at the interest shown in this plaster by *Metamorpha stelenes* and I watched two of these fine green butterflies feeding simultaneously presumably on perspiration which the material had absorbed.

The *Pierellids* form a most beautiful genus. They gambol inside the forest, look easy to catch but remain very close to the ground, melting in well with their background. Usually I found insufficient room to sweep at them and bringing down a net on top of a settled specimen when that was possible seemed to me to be the difficult beginning of the operation. Lifting the net bag was not the answer as *Pierella hyalinus* keeps low. Unless the net rim fitted the ground the captive slipped out as it was likely to do with the insertion of a hand or killing bottle. Despite its size and the pale blue of its hindwings the colour of its forewings made it difficult to see through the netting sufficiently to be sure of making a clean job of stunning by pinching the thorax. Fortunately, I was able to obtain sufficient at Cruse Field and Forest Reserve after earlier failures in the Northern Range to save having to prepare previously a 'killing ground' where there would be an attractive shaft of sunlight and put down bait.

The estate where I was living at Pointe-a-Pierre boasts about three hundred houses for its senior staff. The houses are all within their own grounds and divided off from roads and one another with Hibiscus hedges. The extent of these hedges must have been miles and so butterflies were thinly spread over the number of flowers available. Towards the end of my stay I had a useful harvest of 'Sulphurs' one of which, *Anteos chlorinde*, I hadn't seen before and I was able to replace damaged *Phoebis philea* with fine specimens. All this happened over two days in my cousin's garden. I was soon to learn that this was the only stretch of hedge not to have been clipped as he had expressed concern that he was to be otherwise overlooked at that particular spot unless he got a reprieve and his request was granted! A perfect example of the value of the concentration of available bait.

Mr. Barcant has been conducting a study of the sole Trinidad *Morpho*, *Morpho peleides insularis*, initially by breeding these fine creatures in an ample cage constructed in his garden, and in a second cage he has been working on the cross-breeding of his female specimens with males of *Morpho achillaena*, a similar but recognised separate species from Brazil. When he has females available he arranges with a Dr. Keith Brown for males of the latter species to be papered and transferred by plane to be released in a few hours in the Trinidad cage. While spending a week-end with Malcolm, he arose on the Sunday to leave at 4.0 a.m. for Piarco airport arriving back in time for breakfast after having released two *M. achillaena* amongst his females. One was paired later that day. The experiment continues and it will be interesting to hear in due course the results and whether as is believed the two species are in fact separate races of the same species.

While my cousin, his wife and I were inside inspecting the cages, the *Morphos* and their larvae, Malcolm presented Denise with a pupa with instructions that it was to be hung on the curtain so that she would be able to observe the butterfly emerge and spread its wings. A case was

provided and I was to set the specimen for her retention. In due course the event occurred and Denise stood purring sweetly and softly watching the wondrous event. Unfortunately at the final stage the emitting of meconium which failed to fall clear of the curtain found me suddenly in the midst of a domestic crisis! Furthermore, none of the many magic cleaning potions available would suffice. By nightfall, however, the washing-machine had successfully come to my aid, the stains had gone, *all* the lounge curtains presented a whiter than white effect, the butterfly was set and perfect tranquility again reigned!

I make no apologies for stressing the problems and difficulties, to which I might add lack of botanical knowledge, whereas I might have reflected a chapter from 'Tutt', for I have met and read of too many who imply the ease of collecting this and that whereas scholarship, luck and, more likely, much painstaking industry are the principal ingredients of success. After all we learn in the field, often by our failures, far more than can be indicated in the trays of well set specimens. Collecting at the end of the season, whatever may have been the various causes, I am thankful even to have returned having caught species comprising the *Morpho*, all three *Caligos*, 5 *Danaids*, 8 *Papilios*, 8 'Sulphurs', 16 *Heliconids* and similar kinds, 3 of the 4 *Hamadryads*, some beautiful 'Hairstreaks', all included in over 400 set specimens of 125 species.

And so ended a cycle commenced as boys when my cousin watched me curiously as I caught butterflies at Buddleia in our grand-mother's garden in the Isle of Wight in the early 20's. Little could we have known what he was being prepared for in distant lands in the middle 60's and I I am most grateful to him and his wife for their help and sympathy. My hope now is that in due course I may return to spend in Trinidad the end of May and the whole of June to tackle the deficiencies, collect some moths and, above all, to meet again Malcolm Barcant, his wife and others who were so kind to me during my happy and instructive stay.

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A note on the Butterflies of the Balearic Islands

By T. R. New

The majority of the few British lepidopterists who have written on the butterflies of the Balearic Islands have commented on the paucity of the fauna encountered. Jones (1906) considered that the extreme aridness of Majorca, combined with the resulting lack of variety of the vegetation was largely responsible for the few butterflies found there, and his views are borne out by Smith (1953). No endemic species of butterflies are known up to the present, but the subspecies *balearica* Rebel of *Polyommatus icarus* Rott. is confined to the Islands. The British literature on the Balearic butterflies is largely limited to notes on collecting on Majorca, but Walker (1906) recorded seventeen species from Minorca. Most of the butterflies present are probably found on all the islands in the group.

Bretherton (1966) considered that about twenty-nine species were present in the Balearics, but commented that *Callophrys rubi* L. appeared not to have been recorded from the group. This species was

listed by Holford (1915), and was found commonly during April, 1967, when the present author visited Majorca. Collecting was centred on Palma, and the butterflies encountered are listed below, using the terminology of Bretherton (loc. cit.). Twenty species were found during the period 2nd-14th April.

Carcharodes alceae Esp. Only two seen, both worn.

Papilio machaon L. Abundant, and mostly very large and fresh. Appear to be the subspecies *bigenerata* Vty., as suspected by Smith.

Pontia daplidice L. Fairly common in all areas around Palma.

Pieris brassicae L. Five specimens seen, all rather worn.

P. rapae L. Very common and variable in condition.

Colias crocea Fourc. One or two seen most days but never more commonly. No f. *helice* were seen.

Gonepteryx cleopatra L. Common in the hills around Palma, but only a few seen in the lower areas. All fresh.

Vanessa cardui L. A few specimens seen.

V. atalanta L. Fairly common.

Pararge aegeria L. Common, and varying from fresh to very worn.

P. megera L. Less abundant than *aegeria,* but usually found with it.

Pyronia cecilia Vall. Two worn specimens.

Coenonympha pamphilus L. Abundant everywhere.

Callophrys rubi L. Common in meadows around Palma, and also found further inland.

Lycaena phlaeas L. Three specimens found, all ssp. *eleus* F.

Syntarucus pirithous L. Not common, but several found on the hills around Genova.

Lampides boeticus L. One only, Genova.

Lycaenopsis argiolus L. One only, Palma.

Aricia cramera Esch. Fairly common. Fresh, and found mainly in meadows.

Polyommatus icarus balearica Rebel. Many small specimens of *icarus* were taken around Palma, and seem referable to this subspecies.

The butterfly fauna of the Balearics is more remarkable for its absence than for the species present. Several migratory species which are widespread and common in many parts of Southern Europe do not appear to have been recorded, notably *Colias australis* Vty. and *Issoria lathonia* L. Fritillaries are generally scarce, and several other Vanessids found on other Mediterranean islands also appear to be absent — for example *Polygonia egea* Cram. and *Aglais urticae* L. It would be interesting to learn if these have become extinct there, or have never reached the Balearics. There is little evidence of recent speciation, apart from *P.i. balearica,* and it is rather surprising that other non-migratory species have not evolved peculiar forms. With the exception of a very few African elements (*Charaxes jasius,* L., *A. cramera*) which are also found elsewhere in Southern Europe, the fauna is typically palaearctic in character.

Imperial College Field Station, Silwood Park, Sunninghill, Ascot, Berks.
26.iv.1967.

REFERENCES

Bretherton, R. F., 1966. A Distribution List of the Butterflies (Rhopalocera) of Western and Southern Europe. *Trans. Soc. Brit. Ent.,* **17** (1) : 1-94.

Holford, H. O., 1915. Notes on butterflies in Majorca in Jan., Feb., and March 1914. *Entomologist*, **48** : 55-57.
Jones, A. H., 1906. Notes on the Lepidoptera of the Balearic Islands. *Ent. mon. Mag.*, **42** : 170-171.
Smith, D., 1953. Butterflies seen in Majorca during October 1951. *Entomologist*, **86** : 29-31.
Walker, J. J., 1906. *Ent. mon. Mag.*, **42** : 171. (Editorial note following paper by Jones.)

Tipulidae (Dipt.) in Central and North Wales

By R. M. Payne and A. E. Stubbs

We spent the first few days of June 1966 collecting Diptera in Central and North Wales. Entering Wales at Stanner Rocks, Radnor, we collected by the River Wye and in one or two other places near Rhayader, and then moved north to spend our second night at Dolgellau, collecting on the barren hills of Montgomeryshire during the morning, and on the southern slopes of Cader Idris in the afternoon. On the third day, we had a successful morning by the side of the Mawddach estuary near Llanelltyd, followed by some very warm hours on the dunes at Llanbedr and Harlech, and then a dash inland to the wood at the head of Cwm Bychan. That night we stayed at Harlech. The following morning we explored the wooded ravine between Maentwrog and Trawsfynydd Reservoir and in the afternoon we moved into Caernarvonshire. Unfortunately, the weather now broke and cut short our collecting near Criccieth, but on our final day we managed some useful stops by the roadside on our way south, culminating in a productive couple of hours in a wood at Llanfair Caereinion.

We are grateful to the Nature Conservancy for permission to visit and collect in a number of Reserves.

The following notes, arranged by county and habitat, deal with Tipulidae, of which we found and identified 80 species (over one quarter of the British fauna) and Ptychopteridae, of which we found two species. Other flies collected (mainly by A.E.S.) will be the subject of a subsequent article.

Little is known of the ecological requirements of Tipulidae, but since the early stages of many species live in damp soil, some comment on geology and rainfall (taken from the 10 miles-to-the-inch rainfall map published by the Ordnance Survey) is included. Potential water deficit is probably more important than actual rainfall, but no detailed maps are available. The habitat descriptions include aspect, slope and vegetation as thought relevant, factors which affect both soil drainage and the life of the adult insect.

RADNOR, V.C. 43

Stanner Rocks. G.R. 32/262583. Annual rainfall 35-40 ins. Sweeping basic grassland here on 1st June produced only a single *Tipula vernalis* Mg.

Marteg Bridge. G.R. 22/952715. Rainfall 50 ins. We spent some time by the River Wye 2½ miles north of Rhayader (alt. 740 feet) on 1st June. Sweeping in the lush vegetation on the steep wooded bank, where ferns, Giant Woodrush and Meadow Sweet were growing under Alder and

Sycamore, we took *Tipula variicornis* Sch., *T. montium* Egger, *Limonia nubeculosa* Mg., *Dicranomyia mitis* (Mg.), *Rhipidia maculata* (Mg.), *Trichyphona immaculata* (Mg.), *Elaeophila submarmorata* Verrall, *Lipsothrix remota* (Walker), *L. errans* (Walker), *Cheilotrichia cinerascens* (Mg.), *Erioptera lutea* Mg., *Ormosia nodulosa* (Macq.), *O. depilata* Edwards and *Molophilus appendiculatus* (Staeg). On shingle above the water-line we found a small *Rhabdomastix* which keys out to *R. parva* in Coe (1950, R. Ent. Soc. Handbook, Nematocera). A most interesting capture was *Hexatoma fuscipennis* (Curtis), apparently new to Wales. This occurred in plenty, dancing in swarms over clumps of Giant Woodrush and ferns, with single specimens running on the silt by the edge of the river.

Glan Llyn. G. R. 22/949688. Peat and clay drift. Rainfall 50-60 ins. Later in the day we collected here along the edge of a slow stream and amongst marsh vegetation at the outflow of the lake (alt. 750 feet). Small sallows lined the stream, and the marsh was dominated by *Phragmites*, with beds of sedges and rushes. We took *Tipula oleracea* L., *T. lateralis* Mg., *T. luna* Westhoff, *Prionocera turcica* (F.), *Rhipidia maculata, Trichyphona immaculata, Phylidorea fulvonervosa* (Sch.), *P. squalens* (Zett.), *Cheilotrichia cinerascens, Erioptera lutea, E. fuscipennis* Mg. and *E. trivialis* Mg. The small Ptychopterid *P. minuta* (Tonn.) was also taken in some numbers.

Rhayader. G.R. 22/961681. On our way back to Rhayader, we stopped by the main road at a narrow strip of Alder carr (alt. 695 feet), on alluvial soil. In the swampy wood by the stream, where there was a luxuriant herb layer dominated by Marsh Marigold, *Oenanthe* sp., ferns and the grass *Phalaris arundinacea,* we took *Tipula variicornis, Cylindrotoma distinctissima* (Mg.), *Limonia nubeculosa, L. macrostigma* Sch., *Dicranomyia mitis, Trichyphona immaculata, Phylidorea fulvonervosa, Elaeophila maculata* (Mg.), *Pilaria nemoralis* (Mg.), *Erioptera lutea, Ilisia occoecata* (Edwards) and *Molophilus griseus* (Mg.). *Ptychoptera albimana* (F.) was also present.

A few yards upstream, the ground vegetation of the alder swamp was quite different. Perhaps because of grazing in the past, the treacherous ground was covered mainly by short grass. Species noted here were *Tipula luna, Dicranomyia fusca* (Mg.), *Pedicia rivosa* (L.), *Trichyphona immaculata, Elaeophila maculata, Cheilotrichia cinerascens, Erioptera lutea* and *E. trivialis. Ptychoptera albimana* was less frequent than in the other habitat.

Elan Valley. G.R. 22/915660. Rainfall 60-70 ins. In the late afternoon of 1st June, we scrambled up a small mossy gorge cut in shales on the west-facing slopes below Glog Fawr. By the stream (alt. 850 feet), we took *Tipula luna, Limonia nubeculosa, Dicranomyia chorea* (Mg.), *D. mitis* and *Molophilus flavus* Goet.

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Dylife. G.R. 22/864939. Rainfall 70 ins.+. On our way north on 2nd June, we stopped for a few minutes at Dylife (alt. 1150 feet), where on peaty ground with rushes and Marsh Violet we took *Tipula luna, Nephrotoma maculata* (Mg.)—a male with unusually dark stigma—*Trichyphona immaculata, Dicranota exclusa* (Walker) and *Erioptera trivialis.* In a Juncus/Sphagnum flush on the opposite side of the road (alt. 1240 feet) a *Dolichopeza albipes* (Stroem) was put up.

Rhiw Fawr. G.R. 22/837955. Rainfall 70 ins. Our next brief stop was by the roadside in a remote part of the barren hills of Central Wales, where on the floor of a steep-sided north-west facing valley there was a Juncus/Sphagnum bog with a small stream (alt. 1450 feet). Here we found a few *Tipula subnodicornis* Zett., with *Nephrotoma maculata, Amalopis occulta* (Mg.) and *Elaeophila trimaculata* (Zett.).

Llanfair Caereinion. G.R. 33/095067. Rainfall 40 ins. We returned through Montgomeryshire on 5th June, and spent some time in a north-facing pedunculate oakwood sloping very steeply down to the Afon Banwy neu Einion (alt. 500-390 feet). The wood had been thinned and planted with conifers and hardwoods some 2-3 years previously, and there was a rich growth of grasses, buttercups, rosebay, etc. We had a varied haul here:—*Tipula variicornis, T. variipennis* Mg., *T. pseudovariipennis* Czizek, *T. unca* Wiedemann, *T. oleracea, T. luna, Dicranomyia mitis, D. modesta* (Mg.), *D. autumnalis* (Staeg.), *Austrolimnophila ochracea* (Mg.), *Pilaria nemoralis, Cheilotrichia cinerascens, Erioptera lutea, Ormosia nodulosa, Scleroprocta danica* Nielsen, *Molophilus griseus, M. cinereifrons* de Meij. and *Tasiocera fuscescens* Lacks.

At the foot of the slope, the river was about 30 yards wide but very shallow, the bed a dip section of highly inclined shales forming ridges. A zone of lush vegetation formed an island along the centre of the river, with tall grasses, *Oenanthe* sp. and sallow. The whole situation was well sheltered by the tall trees (largely ash) on either side. Here *Tipula montium* was common, and *T. flavolineata* Mg. frequent. *T. luna, Limonia nubeculosa* (only under the river bank), *Rhipidia maculata, Crunobia littoralis* (Mg.), *Erioptera lutea* and *Molophilus appendiculatus* were also taken.

MERIONETH, V.C. 48

Cader Idris. The fine, warm afternoon (2nd June) we spent in the National Nature Reserve on the southern side of Cader Idris proved disappointing so far as crane-flies were concerned. Annual rainfall here ranges from 80 to over 100 ins., and the acid rocks are largely volcanic in origin.

Just before entering the Reserve at Dol-y-cae, we caught a male *Tipula hortuana* Mg. in the boulder-strewn conifer plantation at GR. 728115. Inside the Reserve among mossy boulders underneath Sycamore we flushed *T. variicornis, T. alpium* Berg. and *T. pabulina* Mg.

We followed the stream up through the steep oakwood above Dol-y-cae. Among the boulders, rapids and waterfalls, we found the ubiquitous *T. variicornis, Dolichopeza albipes, Limonia nubeculosa, Dicranomyia mitis, D. fusca, Trichyphona schummeli* (Edwards) and *Pilaria nemoralis.* Just above the wood, *T. variicornis* and *Pedicia rivosa* occurred among flushes on the steep peaty slope, while *T. subnodicornis* was seen on *Sphagnum* bog below Llyn Cau. Around dry rocks on the ridge of Craig Lwyd at 2,200 feet, *Tipula alpium* was abundant, and this species was also noticed on the steep north-facing bilberry slopes down to 1,550 feet.

Llanelltyd. G.R. 23/705195. Rainfall 60 ins. Early on 3rd June, we stopped the car at the edge of the wide Mawddach Estuary, and descended the short Hawthorn-covered slope to the marshy (but not noticeably brackish) ground, where we took a fine male of *Tanyptera atrata* v. *ruficornis**, and also *Tipula oleracea, T. luna, Prionocera turcica, Trichyphona immaculata, Phylidorea fulvonervosa, P. ferruginea* (Mg.),

Elaeophila maculata, Pseudolimnophila lucorum (Mg.), *Pilaria discicollis* (Mg.) and *Erioptera fuscipennis.*

We visited this locality again on 5th June, concentrating this time on the bracken, grasses and low herbage at the edge of the wooded slope. Here we took *Tipula flavolineata, Dicranomyia autumnalis, Trichyphona immaculata, Epiphragma ocellaris* (L.), *Phylidorea fulvonervosa, Pilaria adjuncta* (Walker) and *Molophilus medius* de Meij. Farther out on the marsh, we added *Tipula unca* and *Ptychoptera minuta* to the list for this locality.

Morfa Dyffryn. G.R. 23/572226. Rainfall 40 ins.+. The southern end of the dunes, visited on 3rd June, proved more interesting for flies of other groups, but we found *Nephrotoma submaculosa* Edwards to be quite common among the marram-grass.

Morfa Harlech. G.R. 23/568328. Rainfall 40 ins. We went on from Morfa Dyffryn to collect on this National Nature Reserve, but again we found that sand dunes are not good crane-fly country. In addition to *Nephrotoma submaculosa* we saw a few *Tipula variicornis* in the damper areas.

Cwm Bychan. G.R. 23/648310. Rainfall 70-80 ins. Later in the afternoon of 3rd June, we went inland to the north-facing oak woodland on grits at the head of Cwm Bychan. Following the rocky stream upwards (alt. 600-800 feet) through the wood, we found *Tipula variicornis, Limonia nubeculosa* and *Dicranomyia mitis* to be abundant. Other species occurring were *Tipula variipennis, T. alpium, T. flavolineata, T. luna, Dolichopeza albipes, Trichyphona schummeli, Epiphragma ocellaris* (mainly on dead birch leaves in the lower part of the wood), *Phylidorea phaeostigma* (Sch.), *P. squalens* and *Pilaria nemoralis.*

Many empty pupae of *T. flavolineata* were seen protruding from a fallen birch trunk in a clearing, and on removing some of the bark, live pupae were found in the powdery wood immediately beneath. A male was bred through to confirm the identification.

Above the wood, we emerged into open heathery ground, and by the rocky stream here we took *Tipula variicornis* and *T. variipennis.*

Ceunant Llennyrch. G.R. 23/661391. Rainfall 60-70 ins. We spent the early morning of 4th June in this steep-sided wooded ravine. Working upwards from Ivy Bridge at Maentwrog, we found the following species abundant along the lower 400 yards of the stream, and on the rocks at its margin:—*Tipula variicornis, Dolichopeza albipes, Limonia nubeculosa, Dicranomyia mitis* and *Austrolimnophila ochracea.* Less common species were *Dicranomyia decem-maculata* Loew, *D. fusca, D. aquosa* Verrall, *Rhipidia maculata, Phylidorea fulvonervosa, Pilaria nemoralis, Lipsothrix errans* and *Scleroprocta danica.*

In the oak and birch woods above the ravine (on the west bank) we found *Tipula maxima* Poda in a patch of sallow carr, *T. pabulina, T. flavolineata, Dolichopeza albipes, Limonia flavipes* (F.), *L. tripunctata* (F.), *Dicranomyia dumetorum* Mg., *D. mitis, Rhipidia maculata, Epiphragma ocellaris, Austrolimnophila ochracea, Pilaria nemoralis, Ormosia nodulosa, Molophilus obscurus* (Mg.) and *M. flavus.*

We paid special attention to a large patch of *Allium ursinum* (Ransoms) occupying a basic flush coming from a dolerite dyke, and found *Limonia flavipes* and *Austrolimnophila ochracea* in some numbers, with

odd specimens of *Tipula rufina* Mg., *Ula sylvatica* (Mg.), *Epiphragma ocellaris*, *Molophilus serpentiger* Edwards and *M. appendiculatus*. A patch of *Mercurialis perennis* (Dog's Mercury) under Hazel produced *Limonia flavipes*, *Austrolimnophila ochracea* and *Ormosia nodulosa*.

Coed Y Rhygen. G.R. 23/678370. Rainfall 70-80 ins. Later in the morning we visited the western part of this National Nature Reserve on the shore of Trawsfynydd Reservoir. The nuclear power station for which the reservoir was constructed is expected to warm up the water in the reservoir and so have a slight effect on the climate in this Reserve. Present records of the insect fauna may, therefore, be of considerable interest in the future.

Unfortunately, the vegetation in this oak and birch woodland was too wet for sweeping, but in a boggy clearing where Bog Myrtle was abundant (alt. 750 feet), we found *Tipula variicornis*, *Amalopis occulta*, *Phylidorea squalens*, *Pilaria nemoralis*, *Gonomyia dentata* de Meij., *Cheilotrichia cinerascens*, *Ormosia nodulosa*, *Scleroprocta danica* and *Molophilus flavus*. We failed to find any *Triogma trisulcata* (Sch.) which A.E.S. had taken here in early May 1965.

At the margin of the wood, a very large female *Tipula* was caught near the ground, which subsequently appeared to be only a dark-winged form of *T. scripta* Mg.

Harlech. G.R. 23/590316. Rainfall 45 ins. Apart from a male *Pedicia rivosa* found in the bathroom on 3rd June, our collecting here was done by the A496 on 5th June, when we ventured a few yards into an ash wood with some sycamore on a steep boulder-strewn slope facing north-west. The ground vegetation was mainly large fern clumps and grass. A remarkable absentee was *Tipula variicornis*, which had been so abundant in most of the other woods visited. Species taken here were *T. unca*, *T. oleracea*, *T. lunata* L., *Limonia nubeculosa*, *L. flavipes*, *L. tripunctata* (found plentifully for the first time), *Rhipidia maculata*, *Austrolimnophila ochracea* and *Molophilus griseus*.

Bontddu. G.R. 23/660184. Rainfall 50 ins.+. Later on 5th June, we stopped at a polluted roadside marsh on the edge of the Mawddach Estuary. Reeds, Bog Myrtle and some sallows were present, and the crane-flies taken were *Limonia flavipes*, *Trichyphona immaculata*, *T. unicolor* (Sch.), *Phylidorea fulvonervosa* and *Erioptera fuscipennis*.

CAERNARVON, V.C. 49

Tremadoc. G.R. 23/573405. A rushy field opposite Coed Tremadoc yielded only *Tipula luna* on 4th June.

Criccieth. G.R. 23/512381. Rainfall 40 ins. On 4th June, we spent a short time in a very wet peaty sallow copse behind the coastal railway, where, in early May 1965, A.E.S. had taken *Ptychoptera minuta*. A small pool with Bog Bean was surrounded by *Juncus*, and the carr vegetation included *Dryopteris* and other tall plants. Here we took *Dicranomyia fusca*, *D. autumnalis*, *Rhipidia maculata*, *Helius longirostris* (Mg.), *Phylidorea ferruginea*, *Pilaris discicollis*, *P. adjuncta*, *Cheilotrichia cinerascens*, *Erioptera lutea*, *E. fuscipennis* and *Molophilus griseus*.

*We learned later that K. C. Side had taken a male of this species in a similar habitat at Llanfihangel, some six miles to the south, on 30th May.

Notes and Observations

HADENA BLENNA HUB. (PEREGRINA TREITS.).—Why has not this moth, called 'The Stranger' in our popular books, been recorded as an inhabitant of our islands yet? I suspect the answer to that question is that nobody has taken the trouble to look for it. Quite likely it occurs on the western seaboards of England and on the southern and western coasts of Ireland. There is a good account of it, with instructions where and when to look for it and how to find it both as larva and imago in Vol. 64, No. 6 (June 1952), pp. 174-177 of the *Record*. Now that every collector has a motor-car will not someone make a 'dead set' at it this coming autumn? It feeds on Wild Beet, *Beta maritima* L., which is a saltings plant and grows in England and Scotland in muddy sands by the seashore south of Fife and Argyll, and probably Ireland, too. Will not someone 'have a go' this year?—P. B. M. ALLAN.

AN UNEXPECTED VISITOR TO A MERCURY VAPOUR TRAP.—As I was going through the catch in my trap here on the morning of March 5, 1967, when quite a number of insects were attracted, I was surprised to find in the container, a bat, still alive. I let it go, but from its appearance, there seems little doubt it was a long-eared bat, which apparently swoops on its prey from a height and in this case the glare may have made it miss its quarry and may have allured it too low, as I have never known a bat to be caught in the trap itself, though Mr. Austin Richardson tells me he also had one caught in this way about the same period.—C. G. M. DE WORMS, Three Oaks, Woking. 23.iv.1967.

CELASTRINA ARGIOLUS L.—It is with great pleasure that I am able to report having seen several *Celastrina argiolus* L. (holly blue) flying in the Bromley district this spring. The first was a male, about April 21, which I was able to watch closely as it fed on matching forget-me-not (*Myosotis*) flowers, and saw it skilfully evade dive attacks by a sparrow and a blackbird. During the past ten days, I have seen two almost daily, and on one occasion, three specimens at one time on my hollies, and on a bed of a dwarf, profusely flowering, holly species on a nearby housing estate I watched two females busily ovipositing on these flowers, which were larger than those of the normal tree holly.

In a year when moths would seem to be almost non-existent (I think I could count the number noted in my headlight beams on my fingers) and two Pierids at once make a sight to look round at, it is, to me, strange that this little "blue" should have apparently got the better of the adverse conditions of to-day; long may it continue to do so.—S. N. A. JACOBS, 54 Hayes Lane, Bromley, Kent. 18.v.1967.

ERIOGASTER LANESTRIS L. In 1962 I managed to obtain nine cocoons from a few small eggar larvae received from a friend. One emerged in April 1964 and another one in April 1966. After reading the contribution of R. W. Watson in the March issue, I looked up South and noted that Barrett had forced some out in a warm room, so I brought the cage from the garage and put it in the warm kitchen on March 19. The following day a perfect male emerged. As no more emergences occurred, I decided to dissect the remainder of the cocoons on April 19; they all contained dried or semi-dried pupae, so that was the end of the experiment.—L. G. F. WADDINGTON, 9 Greenleafe Avenue, Wheatley Hills, Doncaster. 20.iv.1967.

Garden Ants, Lasius niger L., Building Shelters for Aphids.—In 1965 and again in 1966, worker ants from a nest of the common *Lasius niger* L. in the front garden of my home at Pill, North Somerset, constructed tube-like runs of soil particles up the stems of three of my garden rose-bushes. At the junctions of some of the branches these runs were particularly thickened, and when I opened up some of these, I found them to be full of a species of black aphid which the ants were tending.

I sent some of these and their attendant workers to Dr. C. A. Collingwood, who kindly showed them to his colleague at the Ministry of Agriculture and Fisheries Agricultural Advisory Service at Reading, Mr. H. G. J. Stroyan, who identified the aphids as *Maculolachnus submacula* (Wlk.), Syn. *Lachnus rosae* Cholodk., one of a group of weed-feeding species. Apparently, Lachnid aphids do not thrive in the absence of ants.

I believe that instances of ants in the British Isles building such shelters for their aphid "cows" have rarely been recorded, if at all; in fact, I would be grateful for any published references that readers of "The Record" can bring to my notice.—J. F. Burton, F.Z.S., F.R.E.S., B.B.C. Natural History Unit, Broadcasting House, Whiteladies Road, Bristol, 8.

Migrant Butterflies in Cornwall in September 1966.—An ornithologist friend of mine, Mr. D. A. C. Cullen, has given me the following notes of migrant butterflies which he noted while bird-watching in the Hemmick-Boswinger coastal area near Mevagissey, Cornwall, during September 1966:—11th September: two *Colia croceus* Four.; 15th September: two *C. croceus; Vanessa atalanta* L. and *V. cardui* L. plentiful at Greeb Point. At Trevose Head on the north Cornish coast he saw one *C. croceus* on 16th September.—J. F. Burton, B.B.C. Natural History Unit, Broadcasting House, Whiteladies Road, Bristol, 8.

An unusually late capture of Empis (Pachymeria) tessellata L. (Diptera, Empididae).—During the summer of 1966, while temporarily employed by the Nature Conservancy, I collected two specimens of the pale-legged form of *Empis* (*Pachymeria*) *tessellata* L. at Monks Wood Nature Reserve, Huntingdonshire. This form is less common than the typical dark-legged form and has previously been recorded only from Bedfordshire (Lawrence, 1949, *Ent. mon. Mag.*, **85**: 23), Buckinghamshire (Parmenter, 1951, *Ent. mon. Mag.*, **87**: 41), and Hampshire (Smith, 1952, *J. Soc. Brit. Ent.*, **4**: 90).

E. tessellata is well known as an early summer species, being most common during May and June, but I arrived at Monks Wood on 10th July and took my first specimen, a male, on 15th July. At that time I considered myself fortunate to have seen this species since this date was rather late. I made no special search for it during the rest of my stay at Monks Wood, but, to my surprise, I collected another male on 9th September.

This date was so far outside the recognised flight period that, suspecting misidentification, I sent both specimens to Mr. L. Parmenter who kindly confirmed my original identification and informed me that his latest record for this species was 24th July.—H. J. Wills, 17 Festing Road, Southsea, Hants. 22.iv.1967.

VAST NUMBERS OF LERIA MODESTA (DIPTERA) ON SNOW-COVERED MOUNTAIN. —My brother-in-law and I have been commissioned by the Ross and Cromarty County Council to make a weekly survey on the ski-ing prospects of Ben Wyvis. On our 22nd February visit this year we were surprised to find many thousands of a small dipterous insect on the higher slopes of Ben Wyvis (pronounced 'wi-vis'). The flies were crawling, or flying a few inches, over a foot of fresh snow, in bright sunshine, when the shade temperature was only 25°F. The fact that struck us as curious was that the insect was so evenly distributed over the whole surface of this exceedingly bulky mountain, from the 2000 foot contour to the summit, with one fly to roughly each square yard. The flies at the actual summit cairn—corrected on the latest Ordnance Survey map to 3433 feet above sea level—were moribund. A little below the summit ridge four Snow Buntings were running over the snow actively picking up the flies. Kenneth G. V. Smith of the British Museum (Nat. Hist.) kindly identified the species as being *Leria modesta* subspecies *czernyi* Collart (Heleomyzidae). He asked me to collect further specimens to see if the typical form occurs in Scotland, but unfortunately we have not encountered this species in numbers on subsequent climbs.—DEREK C. HULME, Kyle & Glen, Muir of Ord, Ross-shire. 23.iv.67.

Current Literature

The taxonomy of British black-flies (Diptera: Simulidae) by L. Davies. 1966. *Trans. R. ent. Soc. Lond.*, **118**: 413-511. £2, at 41 Queen's Gate, London, S.W.7.

This paper makes an important advance in the study of these flies in this country whose "biting" females make such an impression on so many humans. 35 species and two varieties are recognised with 7 new species of *Simulin* described, including *britannicum* described only from the larvae.

Keys and descriptions to adults—male and female—pupae, and mature larvae are given. The 49 figures include illustrations of a complete fly defining the terms used, of parts of legs, claws, genitalia of both sexes, parts of larvae and pupae. They are composed of 494 drawings so placed as to provide easy comparison between species. Useful biological and distributional data are given, much of ecological significance, but the author shows that the present appreciation of specific characters has caused some of the older records of habits, etc., to need confirmation as to the actual species involved. The amount of possibility of further discoveries is shown by the new species *urbanum* which was reared from pupae and larvae found in a small stream on Stanmore Common, Middlesex, on London's edge. It ends with a list of 47 references. As the final part of volume 118 of the Society's transactions, it contains the index.—L.P.

General Entomology for Agricultural Students by **Prof. H. L. Kulkarny.** xv + 291 pp. Asia Publishing House, London, 25/-.

In his foreword, the Vice Chancellor of Karnatak University, Dhawar points out that the object of this book is to have a simple and inexpensive textbook for agricultural students which, at a later date may easily be translated into whichever of the Indian languages may be selected for use

in college instruction. He points out that the many textbooks in the English and other languages which exist are too expensive to be within the reach of the Indian student.

The introductory chapters deal with the place of insects in the animal kingdom, harmful insects, beneficial insects (covering parasites, predators, pollinators, commercial insects such as honey bees and lac insects, and the use of insects in weed control) and wonders of the insect world, giving a few outstanding facts calculated to whet the appetite of the student. There follows a chapter on collecting methods, and then a well illustrated chapter on the external anatomy of insects. After this, sense organs, coloration, metamorphosis, internal organs, reproductive system, respiration and nervous system are each dealt with in a short chapter followed again by one on insect behaviour and another giving an outline of the system of classication.

Chapters 18 and onwards deal with the various insect orders and are copiously illustrated by text figures; examples of the various orders are figured with, for the greater part, fine drawings. A chapter is given to each order, or, in the case of small orders, groups of orders, and here again, most are well illustrated, but some of the illustrations are crude, stylized, and in some cases unrecognizable. The Lepidoptera seem to have come off badly in this respect. The illustration of *Bombyx mori* (mis-spelt in the caption) would have been better omitted, and the good drawing of the neuration, which accompanies it, left to tipify the species; it could certainly not refer to the illustration given. The Coleoptera have also been left in the cold where illustration is concerned, and as so many of this order are of so great economic importance, and require detailed examination for determination, this is a pity.

The correction of proofs has not been good, and to revert to the lepidoptera for one example, the coffee borer, *Zeuzera caffeae* Nietn. is spelt in the text *Zeuzera Coffee*, and the caption under the adjoining picture gives *zenzera chffene* N. Many of the errors may be ascribed to the text having been taken down phonetically, but accuracy in a work of such future importance should be given a very high priority.

In criticizing some of the illustrations, I fully realize the necessity for economy, but I think that this end would have been better served by the omission of some of the drawings: *Pieris rapae* L. is, for instance, given a continuous dark border which calls to mind *Colias* rather than *Pieris*, and it is a pity that the general standard of the majority of the drawings could not have been maintained.

A very great deal of information has been skilfully packed into this small, octavo, paper covered book, in the knowledge that this should be transmitted to as many students as possible as quickly as possible. In these days, giving material aid is in great danger of obstructing the far more important idea of helping developing peoples to learn how to produce the means for sustaining life and well-being for themselves. This book will be of the greatest value in fulfilling this purpose and I have no doubt that much will be done in the correction of minor faults, some of which I have mentioned. Having in mind its purpose. I have no doubt that the price in India will be much below that quoted in this country, and the book has my very best wishes for its practical success.—S. N. A. J.

Atalanta.

I have received from Dr. Magne Opheim, of the Oslo Museum, its editor, part 1 of this journal of the Norwegian Lepidoptera Society, dated April 1967. This consists of 52 pages and contains articles for all lepidopterists, commencing with the first part of an account of the Norwegian butterflies, with photographic illustrations of five species. This is followed by a note by the editor on a variety of *Erannis erosaria* Schiff. in which the transverse lines are approximated so as to meet on the dorsum, forming a V. He follows this with a short note on collecting apparatus. A plate follows illustrating the *erosaria* variety, and also specimens of *Autographa gracillis* Lempke and of *A. festucae* L. with line drawings of the uncus of each species on the opposite page. *A. gracilis* is one of several species new to Norway mentioned by Dr. Opheim. This is followed by an article on new localities for some Norwegian lepidoptera, an account of insects taken in the Aust-Agder district in 1966 by Ottar Seglen, and one on lepidoptera taken in the Finse district at 4000 feet in this alpine locality, subject to extremes of climatic conditions. I wish this new magazine success, coupled with the hope that the practice of an English, French or German summary will be extended.—S. N. A. J.

Journal of the East African Natural History Society and National Museum. Vol. XXV, No. 2 (III), June 1965 (Published 30.ix.1965), pp. 76-165, 20/-.

This issue carries an article by R. H. Carcasson entitled "New Lepidoptera from East Africa" (pp. 131-160) which describes twenty four species or sub-species of macrolepidoptera, with six halftone plates illustrating some of the species, and genitalia dissections. The species treated include 3 Nymphalidae, 1 Lycaenidae, Lipteninae, 7 Geometridae, Ennominae, 1 Noctuidae, Acronyctinae, 1 Noc. Westermanninae, 1 Noc. Hadenidae, 2 Noc. Catocalinae, 2 Noc. Plusiinae, 3 Noc. Ophiderinae, 1 Arctidae and 1 Limacodidae. The remainder of the part is occupied by other natural history subjects.—S. N. A. J.

Proceedings and Transactions of the South London Entomological and Natural History Society. 1967, Pt. 1 (March), 30 pp., 7/6.

This issue opens with Outline Life Histories of some West African Lepidoptera, Part II, Limacodidae, by Dr. B. J. MacNulty, with a key to the known larvae of West African species. D. G. Sevastopulo writes on "Lymantriidae—East versus West Africa", and Bruce Ing writes an interesting article on Myxomycetes as food for other organisms, among which organisms, Collembola, Coleoptera and Diptera figure largely. There is a short note on *Oinophila v-flava* Haw. in a distillery warehouse in the Edinburgh district. Formerly, it would appear that this little moth has not been recorded north of York. The remainder of the part is taken up with reports of field meetings of the Society.—S. N. A. J.

Butterflies of South Perthshire by **George Thomson.** 8 pp.

This little booklet is published privately by Mr. Thomson in the hope that it might assist visiting butterfly collectors. It gives a map of South Perthshire showing places named in the text. Seventeen butterfly species are treated in short paragraphs giving their local status, and the text is embellished by eleven illustrations by the author of some of the butterflies mentioned.—S. N. A. J.

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION
(Founded by J. W. TUTT on 15th April 1890)

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THE ENTOMOLOGIST'S RECORD

AND JOURNAL OF VARIATION

Edited by S. N. A. JACOBS, F.R.E.S.

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Is *Stigmella tengströmi* Nolck. (Lep. Nepticulidae) a British species?

By S. C. S. Brown, F.D.S., F.R.E.S.

Tutt, in his *British Lepidoptera*, 1899, Vol. I, makes the following remarks concerning *tengströmi*: "There is only one British specimen extant of this species. The specimen was bred by Sang from *Rubus chamaemorus*, who, it is believed, received the mines from Carrington, whilst the latter was collecting in Scotland". The history of this reputed British species is as follows: In 1874 and 1875, J. Carrington, one-time editor of the "Entomologist" and a macro-lepidopterist was visiting the usual classical localities in Scotland. He came across some tenanted mines of a Nepticulid in the leaves of *Rubus chamaemorus* and sent them to a number of his correspondents. Unfortunately Carrington neglected to make a note of the exact locality, but in all probability it was Rannoch. Out of the batch of leaves sent to Sang one imago was bred, and this specimen eventually passed into the Dr. Mason collection, probably in 1882, when Sang disposed of his collection. When Tutt was preparing the first volume of his *British Lepidoptera* he wrote to Dr. Mason and asked him for further information about this single specimen. Dr. Mason's reply to Tutt was as follows: "I have been comparing my specimen of *N. tengströmi* with Continental specimens of that species, and with Nolcken's description. As far as I can make out, it is that species. It is, however, a male, and the male is much less characteristic than the female". (*in litt.*, 6th June, 1898).

Meyrick (*A. Handbook of British Lepidoptera*, 1895), had refused to recognise *tengströmi* as a British species, for he had remarked: "Supposed British specimens of *N. tengströmi*, Nolck., would seem to have been dwarfed examples of *N. aurella*". This verdict seems to have annoyed Tutt, for he goes on to write (*Brit. Lep.*, Vol. I, p. 247), "We have no suspicion upon what data this remark is based, nor have we ever heard of any "supposed British specimens" other than the one in Dr. Mason's collection". However, Meyrick, somewhat characteristically, ignored this criticism, for in his *Revised Handbook* published in 1928, the text remains unchanged.

Tutt goes on to say that Threlfall had informed him that he bred specimens of a Nepticulid in April 1881, from larvae collected at Braemar, 15th August 1880, but he was very doubtful whether they were referable to this species.

Recently I have had the opportunity of examining the Nelson Richardson collection of micro-lepidoptera which belongs to the Dorset Natural History and Archaeological Society and is now at the County Museum, Dorchester. Under the label *tengströmi* were eleven specimens. Two had labels:—"Schiehallion Perth. Bred 1892. J. H. Threlfall". One had a label "Rannoch 1896, lav. on *Rubus chamaemorus*. W. Savage". The remainder bore the number 3655. On referring to the diary there was the following entry against this number: *Nept. tengströmi*? bred from pupae from Rannoch in 1896 by W. Salvage Lav. on *Rubus chamaemorus* Cloudberry".

A description of these specimens is as follows: Head black, mixed fuscous. Eyecaps white. Antennae whitish fuscous. Forewings coppery purple, golden patch at base, whitish fascia beyond middle. Distal area

purple. Cilia partially tipped white. Length 4-5 mm. This does not tally with the description given by Nolcken who describes the head as being yellowish-brown and the forewings greenish-yellow. In view of the brassy patch at the base of the forewings in these Perthshire specimens I am inclined to think that they are all *splendidissimella*. Meyrick's dismissal of the reputed British specimens of *tengströmi* as being dwarfed examples of *aurella* is of no consequence. Nolcken gives 4-5 mm. for *tengströmi*. Meyrick, in his own description of *aurella*, gives 4-7 mm. This gives both species in the same range of wing-expanse. I myself have bred *aurella* only 5 mm. across.

We know that *splendidissimella* has been bred from *R. chamaemorus* as Tutt records that E. R. Bankes bred the species from Rannoch. In order to attempt to find out the present whereabouts of the Mason specimen of the reputed *tengströmi* I wrote to Mr. J. D. Bradley of the British Museum Natural History Department and asked him if he could help me. His reply was that there are no specimens determined as *tengströmi* in the Stephens-Stainton collection nor in that made by E. R. Bankes.

The Mason Nepticulidae are still in store boxes, and have not been incorporated with the other collection. Mr. Bradley gave them a thorough examination, but he could find none labelled *tengströmi*. He believes that the specimens were mounted, labelled and pinned in the store boxes by Lord Walsingham. It is possible therefore, that Lord Walsingham considered that the Mason *tengströmi* had been wrongly identified, and placed it under the label of another species. In 1966 I decided to visit Perthshire to look for *Rubus chamaemorus* with the hope of finding the mines of *tengströmi*. I had already made myself familiar with the apperance of the mine, as I had examined the one which is in Prof. Waters's collection at the Hope Department, University Museum, Oxford. This had come from Estonia. I have one in my own collection, which was kindly given to me by Carolsfield-Krausé of Denmark. The mine is very short, ending in a blotch, quite unlike that made by *aurella* or *splendidissimella*.

Martin Speight, who had been working on the mountain species of *Syrphidae* in the Strathardle district of Perthshire in 1965, told me that he had come across *R. chamaemorus* in quantity on the slopes of The Cairnwell, 3000 ft., on the Braemar road, just on the border between Aberdeenshire and Perthshire. In view of this information I visited this locality on 12th September, accompanied by Speight. We took the chair-lift, which is there for skiers, to the summit and worked our way back to the road on foot. *R. chamaemorus* was growing plentifully amongst the heather, and I soon found a Nepticulid mine quite commonly in the leaves. Unfortunately all the mines found, about 70, were empty except one, which contained a deep yellow larva. This failed to pupate. The mines were certainly not *tengströmi*, being more like *aurella*, but longer and more twisted than that of the latter species. Subsequently I sent some mines to Mr. Carolsfeld-Krausé for his opinion. His reply was as follows: "As regards the said mines I do not think I shall be able to determine them but only be able to give my not very sure opinion. I will say that they do not belong to *tengströmi* and also not to *fruticosella*, and that *aurella* also must be excluded as a possibility so far to the north, so by ruling the impossible out, I think you are right in that the mines in all probability belong to *splendidissimella;* though the mines are extremely

different from this species on *Rubus fruticosus*, they nevertheless show the same kind of angular mine-shape as in the said species. We must realize, however, that we do not know how *splendidissimella* exactly reacts on a substrate as *R. chamaermorus*, so the only way to get the problem solved is to get the species reared. I think it could be worth while trying, as it possibly could be something more interesting than *splendidissimella*". The mine of *tengströmi*, together with that of *fruticosella* Mll.-Rtz., which occurs on the same plant is figured and described by Hering. According to Clapham, Tutin and Warburg, the distribution of *Rubus chamaemorus* in the British Isles is North Wales and Northern England to Caithness, locally abundant on moors and blanket bogs, only known from Tyrone in Ireland where it is very rare. Widely spread in Northern and Arctic Europe. To sum up, there does not appear to be any evidence that *tengströmi* has ever occurred in Britain, yet it is a species which could well be here. I wish to express my thanks to Mr. A. G. Carolsfeld-Krausé, Mr J. D. Bradley, Mr Ernest Taylor of the Hope Dept. University Museum, Oxford, and Miss E. H. Samuel of The Dorchester Museum, Dorset.

REFERENCES

Tutt, J. W., 1899. *British Lepidoptera*, **1** : 246-248.
Meyrick, E., 1895. Handbook of British Lepidoptera.
Meyrick, E., 1928. Revised Handbook of British Lepidoptera.
Hering, E. M., 1957. Bestimmungstabellen Blattminen von Europa.
Clapham, Tutin and Warburg, 1962. Flora of the British Isles, Edit. 2.

158 Harewood Avenue, Bournemouth. 5.vi.1967.

A note on *Stigmella auromarginella* (Rich.) (Lep. and a selection of a type specimen

By S C. S. Brown, F.R.E.S., and W. Parkinson Curtis, F.Z.S., F.R.E.S.

Brown has been working on the members of the genus *stigmella* (*Nepticula*) found in the British Isles. Curtis has been attempting to complete his *List of the Lepidoptera of Dorset* and has been considering the species of this genus found in the County. It seems to be quite certain that no specimen of *Stigmella auromarginella* (Richardson) has been selected as the type. The collection formed by N. M. Richardson was presented by Mrs. Richardson to the Dorset County Museum after her husband's death. The collection included his note-books and the original drawings of many of the insects in the collection done by Mrs. Richardson. One of these drawings is *S. auromarginella* which was reproduced in colour in Vol. XI of the *Proceedings of the Dorset Natural History and Archaeological Field Club*, figure No. 10, 1890. Miss E. M. Samuel, B.Sc., who is the assistant Curator of the Dorset County Museum, took a specimen from the series of *auromarginella* to place in a drawer of species drawn by Mrs. Richardson. Mr. Dalton, one time Curator of the Museum, had put against the series standing in the Richardson cabinet a label showing that the series were syntypes. The series, including the specimen selected by Miss Samuel, number 28. It seems desirable to us that a specimen should be selected as a lectotype, and accordingly we select the specimen taken by Miss Samuel from among the syntypes as a "lectotype".

It is a female in good condition save that one antenna is missing. When, and as soon as this note has been published, a label will be placed with the lectotype showing that that specimen has been so selected.

The Large Tortoiseshell Butterfly—II

By P. B. M. Allan

(Continued from page 160)

In 1857 Joseph Merrin of Gloucester wrote to the *Entomologist's Weekly Intelligencer* (No. 58, p. 46) as follows:—"Early in September a female *V. Polychloros,* in a very sluggish state, was caught about six miles from here, by a friend of mine, in his hat, and boxed. In two days she laid upwards of 100 eggs, disposing them in a regular manner inside the box. In rather more than a week they hatched, but, being unprepared for their advent as larvae, I lost more than half of them. The remnant of the brood has fed up (on elm) to nearly half an inch long, and have now become apparently dormant for the winter.

"The proceedings of the above female do not appear to have been wholly singular. In consequence of having taken a male *Polychloros* in my summer-house, where he had taken up his quarters for the night, I examined a large elm in a neighbour's garden, and found six larvae of the same size as those I already had, feeding on the suckers thrown up some distance from the trunk".* Merrin then went on to point out "the fact of at least two female *V. polychloros,* inhabiting different localities, having paired in the autumn, and laid their eggs". The letter is dated "October 30th."

Forty years later (1897) Tutt having expressed the opinion that "A few individuals of *N. polychloros* . . . however, instead of going into hibernation, pair, and, I suspect, lay their eggs and die, the larvae being killed off by frost", Merrin wrote a further note on the subject (*Ent. Rec.*, **9**: 328), amplifying a little his original communication.

"In regard to the spring appearances of *E. polychloros,* and the question of its being occasionally double-brooded on the Continent . . . I should like to direct attention to a communication I made . . . so long ago as late in the 'fifties, in regard to a brood of eggs I had from a captured female in September. A friend who was out with a picnicking party, at May Hill, ten miles from Gloucester, boxed a specimen of *E. polychloros,* and gave it to me next day. To my surprise, I found a regular patch of pinkish-brown eggs inside the lid of the box, as well as the living specimen. These eggs hatched in a week or two, and I fed the little hairy caterpillars on the ground shoots of elm. I found similar larvae on the shoots of an elm in a neighbour's garden, but none of the larvae survived the winter".

*A correspondent suggested that these larvae were a species of 'footman' (*Lithosiinae*); but most of that Family feed on lichens or dead leaves, and, *teste* Barrett, only *L. complana* L. (bramble) and *Eilema caniola* Hb. (trefoils) are herbivorous. It seems doubtful if any of these species would feed in the wild on "suckers" of an elm and that so experienced a lepidopterist as Merrin could have mistaken larvae which he bred from the egg with those which he found in a neighbour's garden.

Joseph Merrin (died 1904) was a good and observant lepidopterist. In the Introduction to the second edition (1875) of his useful book *The Lepidopterist's Calendar* "enlarged and corrected to the present time" he tells us that he had "received important aid from" C. G. Barrett, J. B. Hodgkinson, M. Ragonot, H. Marsden, G. T. Porritt, R. Mitford, H. Harpur Crewe, Howard Vaughan, and Bernard Smith, all of whom were leading lepidopterists of the day.

Next comes the Reverend G. H. Raynor, later to achieve fame as the breeder of some remarkable varieties of *Abraxas grossulariata* Linn., the Magpie or Gooseberry Moth. In a note to the *Entomologist* (**6**: 221) he recorded the capture of a *N. polychloros* in cop. with an *Aglais urticae*, also in the autumn.

"In the beginning of August", he wrote, "I found a specimen of Urticae *in coitu* with a *Polychloros*. The Urticae died about a week ago; but the Polychloros, which I suppose to be the female, is still alive, and seems to be hibernating. I am much afraid I shall not get her to lay in the spring, as although I have confined many females on elm, I find that Polychloros persistently refuses to lay in the spring". The letter is dated "Aug. 26, 1872" from Hazeleigh Rectory, Maldon, Essex.

Another lepidopterist the same year sent an equally interesting note to *Entomologist* (**6**: 88). J. A. Towell of Earl's Colne, also in Essex, reported that in the previous spring (i.e., in 1871) he had collected from nettles some larvae of what he considered to be *Aglais urticae* Linn., the Small Tortoiseshell, and from time to time thereafter had added to their larva-cage other larvae of that insect taken from nettles elsewhere. From these mixed larvae he bred a number of imagines which resembled *N. polychloros* in colour and marking but were the same size as *A. urticae*. Some of these specimens he sent to Edward Newman for his opinion, and Newman reported as follows:—

"These specimens have a wonderful similarity to *urticae*, which they do not at all exceed in size; still the colour is nearer to that of *polychloros* than that of *urticae;* and the black spot at the anal angle of the forewing is present, as in *polychloros;* the white spot on the costa of Urticae is absent, also as in *polychloros*".

Newman did not commit himself on the possibility that these specimens were hybrids, and Barrett (*Lep. Br. Is.*, **1**, 129) referring to Towell's record remarked: "I have seen one of these specimens; it is, in all respects, except size, a typical *Polychloros*". He, like Newman, made no suggestion of hybridism. The fact that these larvae were found on nettle suggests that the ovipositing parent was *A. urticae*.

Raynor gave no reason for his supposition that the larger insect which he found in cop. with a Small Tortoiseshell was a female, nor how he distinguished between the sexes of *N. polychloros*. There is very little difference between the sexes of this insect other than size, the female being only slightly larger. And there are large males and small females. I have caught and bred *N. polychloros* in the New Forest (where it was common in the 'nineties) and have netted it in North Hampshire (Pamber Forest), Berkshire (Burghfield Common), and West Essex, and without examining the genitalia with a pocket lens I could never be certain whether a live specimen was a male or a female. I will go so far as to say that without examining the genitalia it is hardly possible to decide the sex until the specimen is either anaesthetised or on the setting-board

and one can examine the genitalia* and measure the alar expanse. In an interesting note in *Entomologist* (**81**: 44) to which I shall refer presently, Mr. N. G. Wykes, who reared a brood of ninety and "all of fine size", wrote: "I found the sexes in many cases extremely difficult to distinguish by any of the methods recommended, and had to rely largely on the somewhat sharper angle of the male hindwings, and the generally fuller build of the female. But I am by no means certain that I have labelled them all correctly".

So I am not satisfied that the "many females" which Raynor had confined on elm and persistently refused to lay eggs in the spring were actually of that sex. In 1872 when Raynor wrote his letter to Newman not every lepidopterist studied the genitalia of his captures, even supposing that he was acquainted with the anatomy of those structures. If they were all females his failure to induce them to lay eggs in the spring is remarkable since other collectors have had no difficulty in obtaining eggs from females, captured in spring, whether in a pill-box or a larva-cage. So I am incluined to think that all Raynor's supposed females were males, as was the imago which he found in cop. with an *A. urticae.*

Here, then, was another instance of *N. polychloros* pairing with *A. urticae;* in this as in Towell's case the pairing was as likely as not in the autumn and the *A. urticae* laid her eggs on emerging from hibernation in the spring. For she also possesses a receptaculum.

Now back to Mr. Tutt again. In December 1890 he printed in his magazine a note by himself headed "Fecundation before Hibernation". It was as follows:—"There seems to be a great deal of doubt as to whether those species of Lepidoptera that hibernate, pair in autumn, or whether the sexes take no notice of each other until the following spring. I have heard it remarked of some *Vanessa* that only the females hibernate, but I have myself found males of most of them in the spring. I have captured *Vanessa polychloros* in copula in August on two or three occasions. Have any of our readers facts on this subject?" (*Ent. Rec.*, **1**: 236).†

This invitation does not appear to have been accepted; at all events no replies were printed by Tutt and three years later he wrote the following note: it was in reply to a contribution headed "Apparent dearth of Diurni" by W. W. Esam:—Our experience this season has certainly not been in the direction suggested by our correspondent. True, larvae have not been common this year as about 'the same time last year', but were even in greater abundance at an earlier period. In the New Forest, in June, larvae usually taken in July and August were beaten in hundreds, and full-fed at that time. *Vanessa* larvae, which should normally be looked for in July, had at that time already disclosed imagines. We bred *c-album, urticae, polychloros, atalanta,* and *io* before the end of June, *and a second brood of all these species* again during the last four weeks. (*Ent. Rec.*, **4**: 273) (my italics).

*The female and male genitalia of *N. polychloros* are clearly shown on Plate III, fig. 4, of *The Genitalia of the British Rhopalocera* . . . . by Pierce and Beirne, 1941.

†In his *British Butterflies*, 1905, p. 343, Tutt wrote: "We once saw two couples paired in July, but have no doubt that the females laid their eggs and died directly afterwards, the progeny probably being killed off in the autumn before coming to maturity".

This last sentence interested me not a little, for it is the only record I have seen of anybody rearing *N. polychloros* from egg to imago in the autumn in England. Apparently an unusually unseasonable year was a causal factor in the bringing about of a reversion to an ancestral habit.

Presumably Tutt's expression 'bred' denotes eclosion of the imago. His "last four weeks" is an indeterminate period, for his note is undated. The date on the cover of *Ent. Rec.* vol. 4, part 20, in which Esam's letter and Tutt's reply are printed, is October 15th, 1893. So if Part 10 was sent to press about 7th October (and we allow a week for the printing of the magazine), the "last four weeks" would indicate the period 9th September to 7th October.

The life-cycle of *N. polychloros* is this: Egg stage, "about 20 days" (Frohawk); larval stage, "about 30 days" (*idem*); Pupal stage, 14 days (*idem*). (When Wykes bred this butterfly his imagines emerged over a period of 10 days (13th-23rd June). On the two occasions when I bred it eclosion of the imago extended over about 8 and 12 days; but so far as I remember at this distance of time pupation also was extended to about a week; so perhaps Frohawk marked his pupae and kept a more accurate record of emergences than I did).

So, working backwards, if we suppose that Tutt's imagines emerged during the week 9th-15th September, the larvae would have pupated from 26th August to 9th September. Hence the larvae would have hatched from the egg between 26th July and 9th August. The eggs, therefore, would have been laid (provided they were laid in a single batch) about 5th-6th July.

There is nothing extraordinary about these dates. *N. polychloros* is normally on the wing in July, though usually towards the end of that month. But what is remarkable is the fact that an imago (or imagines) netted presumably during the first week of July laid eggs, that the eggs hatched, and that Tutt was able to rear both larvae and pupae to the eclosion of the imagines of an indubitable second brood during the succeeding September.

Here I should like to quote the experience of a lepidopterist who, like Mr. Fowler, was so fortunate as to come upon a number of *N. polychloros* apparently on their emergence from hibernation. In April 1947 Mr. N. G. Wykes of Eton College went to look for *N. polychloros* at a locality in Suffolk and he recorded his success in *Entomologist* (**81**: 42-44) as follows:—

"On April 16th", he wrote, the "afternoon was exceptionally hot for the time of year, but in three hours' walking round the woods I saw nothing but . . . *Aglais urticae* and *Nymphalis io*" (Peacock). "Next day was equally fine, and . . . here at 12 (BDST), I saw a *polychloros* flying low and slowly across a small clearing". No more *polychloros* appeared "until about 3 p.m., when suddenly a number of *polychloros*, perhaps twelve in all, started flying in and outside the wood . . . . They were not at all easy to catch, but . . . I managed to take about half a dozen—only one was obviously a female . . . its body much distended with eggs".

On his return to Eton on 18th April, Mr. Wykes "at once put the known female in a large muslin sleeve draped over a small elm seedling about 3 ft. high". He fed this female (with others) "regularly with sugar and water, but never detected any of them feeding, though doubtless they did so". During the last day or two of April some warmer weather

brought them to life, and the female laid a batch of some 150 eggs and some 40 more eggs later. The eggs started to hatch on May 15th, and pupation took place between June 23rd and 28th, the butterflies emerging between July 13th and 23rd.

This interesting note suggests that:—

(1) The captured female emerged from hibernation at about 3 p.m. on 17th April when a number of *N. polychloros* suddenly appeared. Note the 'suddenly', which indicates that Mr. Wykes had been for some time previously, though it were for only half an hour, in the place where the butterflies, "perhaps twelve in all", appeared. I have been unable to discover how long copulation lasts with this species. I turned at once to Frohawk, who tells us (*Complete Bk. of Brit. Butts.*, 1934, p. 30) that he had "succeeded in rearing every species from the egg to the emergence of the perfect insect", yet omits to inform his readers on this bionomic point in the case of any of the butterflies which he had reared. E. B. Ford in his *Butterflies* (1945, p. 100) was more helpful: he tells us that "pairing lasts for a considerable time, in some species for an hour or two". Is *N. polychloros* among the 'some species'?

(2) It seems unlikely that the female *N. polychloros* which Mr. Wykes caught had paired between the hour when it emerged from hibernation (3 p.m.) and the short time later when it was netted. Had Mr. Wykes seen it while it was still in cop. he would surely have told us, and it is hardly likely that it paired while it was in hibernation. It was not paired in captivity by its captor, yet it laid 150 fertile eggs. The implication would seem to be that this imago whose body was distended with eggs had contained in its receptaculum, throughout hibernation, the sperm required for fertilizing its eggs.

It seems hardly likely that the ♀ *N. polychloros* does *not* feed after hibernation and before laying eggs. My own experience has been practically confined to the breeding of moths, and I found over many years that a meal or meals of sugar-water or honey was beneficial to the fecundated female Noctuid if one wished to obtain a good quantity of fertile eggs. In fact this is so much an 'article of faith' with me that I should not think of placing a fecundated female Noctuid in a laying-cage without providing her with carbohydrate nourishment. Also on the occasions when I have paired and obtained fertile eggs from a dozen or so butterflies I found that before laying their eggs they fed at the honeyed flowers which I had placed in their cages. Mr. Wykes (see above) fed his *N. polychloros* females "regularly with sugar and water" and although he did not see them feeding, "doubtless they did so".

In a note in *Entomologist* (**81**: 66), however, Colonel Neville Eliot wrote: "Hibernated *polychloros* was conspicuous in never being seen to feed"; but in a note in that same magazine (**69**: 215) Mr. W. S. Gilles of Bocking, Essex, reported that "A female was captured on April 10th, while feeding at sallow blossom, but proved to have already laid most of its eggs". So I take it that as a rule the female *N. polychloros* like other butterflies, feeds when she emerges from hibernation.

Practically, this problem of spring or autumn pairing could be solved by excising the receptacula of a number of female butterflies, netted in July or August, and examining smears of this structure for spermatoza under a high-powered microscope. But work of this kind could be done only by a specialist skilled in the use of a micro-manipulator. There are of course technicians at the universities and at all the larger hospitals who

do this kind of work with human material almost daily; but it is exceedingly difficult in the case of a butterfly for the material is so small and the necessary procedure is intricate in the extreme. Moreover, I am told that at present the Large Tortoiseshell is becoming a scarce insect in this country, therefore the capture of even half a dozen female imagines at a time would be a matter of some difficulty. On the mainland of Europe, somewhere north of Lat. 50°N, where this insect is still common and there is undoubtedly only one generation, this investigation ought to be possible.

Meanwhile what is required are indubitable records of the actual netting—not merely the spotting through binoculars—in the wild of a pair of *N. polychloros* in cop. in March or April. A single record will not do: one swallow does not indubitably certify a spring. I should also like to know if the ♀ carried the ♂ in flight or vice versa and for how long copulation lasted. These bionomic facts ought to have been ascertained years ago and it reflects no credit on me for having omitted to discover them while I inhabited the New Forest in the 'nineties when *N. polychloros* was a comparatively common insect.

For now that I want to know these things I cannot find a single mention, in an English book or magazine, of any lepidopterist obtaining a pairing of this butterfly in captivity in spring. If the modern orthodoxy is indeed the *veritas quae omnia vincit* it is remarkable that not one of the modernists has produced one iota of evidence which would have been accepted by Mr. Probe, Q.C. (*Ent. Rec.*, **77**: 129 *seq.*) in his examination of the facts of the case. So it is up to the readers of this magazine either to demolish my heterodoxy—or to accept it as the one and only true faith.

(Concluded)

A Visit to Greece in late April 1967

By R. F. Bretherton, C.B., M.A., F.R.E.S.

Spring collecting in Greece has been described in recent years in this journal by Baron de Worms, Major-General Sir George Johnson, and Mr. H. W. Mackworth-Praed. But the differences between our experiences and theirs seems great enough to justify yet another account.

My wife and I visited Greece from 15th April to 1st May, 1967. Besides introducing ourselves to what proved to be an hospitable and entrancing country, our purposes were to see some of the main sites of classical archaeology, to collect some of the special butterflies, and to enjoy and study the magnificent display of flowers for which Greece is famous at this time of the year. We were reasonably successful in all three, despite weather conditions which were probably abnormally poor—certainly much worse than those experienced by the authors mentioned above.

We reached Athens from London by 'plane in the small hours of Saturday, 15th April. After walking for a couple of hours in the centre of Athens, mostly in the attractive Zappeion Gardens, we went at noon by 'bus to the Piraeus, and embarked on the very comfortable cruise ship "Elektra". This took us in the afternoon to the island of Hydra, off the east end of the Argos Peninsula, and then visited next day Delos, Mykonos and Santorin, further out in the Aegean; leaving this at dusk the ship

returned during Sunday night through a choppy sea to the Piraeus. On the first three islands the show of flowers was brilliant, particularly among the ruins on Delos: great masses of yellow *Chrysanthemum coronarium*, blood-red poppies, tall pale blue *Asphodeblus albus*, and purple and white vetches. But there was a remarkable scarcity of butterflies: only a few *Pieris brassicae, P. rapae, Pontia daplidice, Euchloe ausonia, Colias crocea, Coenonympha pamphilus, Lycaena phloeas*, and a single *Carcharodus alceae* were seen. The last island, Santorin, is weird rather than beautiful: an enormous volcanic crater, breached by the sea, with a string of white villages perched on the summit of the black, red and white-streaked cliffs, up which the visitor makes an uncomfortable and precarious ascent on the back of a mule or a donkey. (It is believed locally that these beasts contain the souls of departed politicians who are working out their purgatory!) The volcano, on a subsidiary island, is still fairly active, and while we were there the whole place was frequently wreathed in mist. But, though it was a fascinating spot, it did not look productive either for botany or for entomology.

After this interlude, we picked up our hired Volkswagen in the Piraeus at 8 a.m. on Monday, 17th April, and, having been guided by the kindly hire-agent through the maze of back streets, we set off on the drive to Deplhi. There was good sunshine as we crossed the passes over Mount Parnes between Attica and Boeotia, but the country is rather arid and some short stops yielded no butterflies or flowers of much interest. Rather more of the ordinary species were flying as we ate our lunch beside the (now drained) Lake Copäis. Thereafter the sky clouded, and to our frustration we had intermittent rain for the rest of the journey over the spectacular mountain road from Livadia to Delphi. We arrived, still in rain, at about 4 p.m.; but the evening was fine enough for us to walk down to the museum and to enjoy from our hotel the famous view across the forest of olive trees to the port of Itea and the Gulf of Corinth, 1,800 feet below us.

We stayed four nights in Delphi and so had three full days there. The first and third had warm, sunny mornings, but cloud and showers made them useless for collecting after 3 p.m. The second morning was grey and windy: we unwisely used it for a visit to Arachova, 1,000 feet higher up the road, and were so cold there that we were almost persuaded to buy some of the sheepskin rugs which fill the shops in the village street. However, the weather improved after lunch and gave quite a good afternoon after we had driven down to a lower level. The flowers at Delphi surpassed all expectations: besides the massed vetches, chrysanthemum and poppies, the rocks and cliff faces produced a variety of delicate crucifers, pink stocks, and clumps of sky-blue rock campanulas, with mullein, yellow asphodel and vipers' bugloss on the barer ground. The butterflies, though varied, were never really abundant during our stay, perhaps because of the unsettled weather. Forty species were recorded at or near Delphi, but most of the desirable ones obtained only in very small numbers. However, we did well with the special White, *Pieris krueperi*, of which the first, a fresh female, was caught as it fluttered round the base of the Temple of Apollo and more later above the Stadium and along the base of the cliff beyond the Castalia Spring. I also picked out a few *P. ergane* from among the other Whites and Orange-tips: there were in fact twelve species of these, all flying together. The yellow

Orange-tip, *Anthocaris damone,* was fairly numerous, and there were plenty of fine *A. cardamines graeca*; but their congener *A. grueneri* I found scarce and hard to catch, in contrast to the experience of other collectors. The three Brimstones, *Gonepteryx cleopatra, G. rhamni* and *G. farinosa,* were all in rags and not common. *Melitaea trivia* made its appearance on our third day, flying below the cliff with *M. phoebe.* The Swallow-tails, *Iphiclides podalirius, Papilio machaon* and *P. alexanor maccabaeus,* were all about in small numbers, but the last were almost impossible to catch, as they flew wildly over rough ground and hardly settled, even on attractive-looking thistles. Among the Blues, a rather unexpected capture was a pair of *Lysandra dorylas,* which I think was not recorded from Delphi by our predecessors. The Skipper *Carcharodus alceae* was fairly common, and I secured one *Spialia orbifer.* We met with one unexpected hindrance. The whole area of the ruins has, very recently, been enclosed by a high wire fence, and entrance is limited to a single point, in order that an entrance charge of 10 drachmae (2/6) can be collected. One can no longer wander in and out at the various levels and, to make matters worse, we found that near the Castalia Spring and above the Stadium the fence bisected the best collecting grounds and prevented successful pursuit of many desirable insects. This was particularly annoying because about mid-day, when the sun strikes into it, the great cleft behind the Spring seemed to be very attractive to the Whites and Orange-tips.

In retrospect it is clear that we did not allow enough time for Delphi, which was outstandingly suitable for all our purposes. We had, however, planned to approach the Peloponnese by taking the devious road through the mountains on the north side of the Gulf of Corinth as far as Nafpactus, instead of the more usual route by the three hours' ferry crossing from Itea, just below Delphi; and this digression needed an extra day. We therefore left our hotel early on 21st April. As it was a brilliant morning, we stopped for an hour to collect on the flowery slopes below the village of Hrizo, half way down to the olive groves, which had been commended to me by Major-General Johnson as a good locality for *P. alexanor.* Several of the two common Swallow-tails were flying round a clump of thistles which bordered a wonderful, golden field of chrysanthemum, but we did not see *P. alexanor* there. On the other side of the road, on stony ground dotted with plants of mullein, pink convolvulus, and vipers' bugloss, I was more fortunate, catching several *Melitaea trivia,* brilliant newly-emerged *Pararge maera orientalis,* and three specimens of a black Skipper, *Erynnis marloyi,* which was not reported by de Worms or Johnson. It is an Asiatic species which reaches into the south Balkans but seems to be local and hard to get there. My three specimens were taken in a small corner of a field, among rocks, and I could find no more elsewhere. Another capture on this ground was the attractive day-flying Noctuid *Tarache lucida* Hufn. (*albicollis* F.), a Mediterranean species which is an almost fabulously rare migrant to Britain.

After leaving this profitable spot we drove on through Amphissa and climbed steeply to a high plateau whence there were magnificent views of the snow-clad summit of Mount Parnassus. It might give good collecting later in the season, but we saw no butterflies of interest there that day. After descending again through Lidorikion we stopped to eat our sandwiches in a meadow beside a tributary of the River Mornos. The butterflies here were mainly *Anthocaris cardamines, Leptidea sinapis, Car-*

charodus alceae and worn-out *Gonepteryx cleopatra;* but I did spot and secure a single fine female of the Copper *Thersamonia thersamon.* This Italian and east European species was new to me, and we saw it nowhere else.

So far the road had been reasonably good, but troubles now began. Local advice in Delphi had been that the road was "good except for a few kilometres". In fact it was suffering from "improvement" for most of the remaining 40 miles to Nafpactus, and we took three hours to get there. The procedure for road work in Greece is thorough-going. First, numerous bull-dozers and heavy lorries are brought up to the higher parts of the road, the surface lower down being effectively destroyed by their repeated passage. Next, generous slices of the mountainside are cut away, and the resultant earth and stones spread loosely over the whole length and width of the track. Operations are then suspended for an indefinite period: we gathered that it might be one, two, or three years before the "improved" road received any metalled surface or the attentions of a roller. In the end, the road from Lidorikion to Nafpactus will be a magnificent scenic highway—but when?

There was one unexpected compensation. At one point, high above the Mornos Gorge, we noticed many butterflies flying over, and settling on, the dried mud of the road, even though the sun was by then obscured. They proved all to belong to that rather elusive species *Libythea celtis.* There must have been hundreds of them, and a series was quickly taken, though unfortunately they were worn, presumably hibernated, specimens. We failed to find any of the larval food-plant, *Celtis australis* (the Nettle Tree) nearby, and their concentrated interest in the road mud remains unexplained.

Nafpactus, where we spent the night, is an attractive little port with the remains of a vast Venetian fortress rambling up the hill behind it. A military revolution had taken place in Athens that morning, but we saw no excitement in Nafpactus and, as we stayed at a small hotel where little English was spoken and could not follow the Greek radio, we remained unaware of the event until two days later. On the next day, which was grey and windy, we crossed the short ferry from Antirrion to the Peloponnese and drove through Patras and across the cultivated plain of Elis to Olympia, making a detour to look at the great Crusader castle on the hill above Kyllini. Except on this hill the country did not look suitable for butterflies even had the weather been suitable. These were also disappointing at Olympia, where we stayed two nights. The enclosed ruins and the surrounding hillsides were full of flowers, including the very striking pale blue *Limodorum abortivum* and the Broomrapes, *Orobanche ramosa* L., and *O. crenata;* but butterflies were scarce and mostly of the most ordinary kinds. I did, however, get a pair of the Skipper *Reverdinus orientalis* in the wild garden which surrounds the monument to Baron Coubertin, the founder of the modern Olympic Games. This is a greyer insect than the western *R. alchymillae* and also differs from it structurally. It apparently completely replaces the latter in Greece and further east, though there may be some overlap in southern Yugoslavia. Whether the two should be regarded as vicarious species, or merely sub-species, is doubtful.

From Olympia we plunged into the centre of the Peloponnese in order to visit the remains of the 5th Century temple at Bassae, nearly 4,000 feet

up on a mountain ledge above the little town of Andritsaina. After spending a night in the excellent Xenia Hotel there we went on via Megalopolis and Tripolis to Tolo on the Gulf of Argos, where we were booked for five nights before our return to Athens. I had expected to do some useful collecting on the way in this varied mountain country. But again the roads, and still more the weather, betrayed us. The only two roads into and out of Andritsaina were being "improved" and were therefore nearly impassable, though the track up the mountain, which led only to the Bassae Temple, was paradoxically tarmacadamed and in excellent order! For weather, we had a grey sky, showers, and a bitter wind throughout our approach to Andritsaina, and a continuous deluge on the next day for the whole of our 100 miles drive to Tolo. This was particularly annoying because I had intended to test the possibilities of the high pass (about 3,000 feet) above Achladokampos, between Tripolis and Argos, where some French collectors had done well some years back. But in the event we had to use the car headlights in order to drive through the cloud which covered the top of the pass! No butterflies were seen on either of these two days.

Tolo is a small fishing village with a fine bathing beach on the Gulf of Argos, and is certainly an excellent base for exploring the Argolid. I had hoped that the south-facing limestone slopes in this area would give good collecting and might yield some early May butterflies which we had not so far seen. But in fact the Argolid seemed to be too arid, when it was not too cultivated, to nourish many butterflies. The top of the hill above Tolo was a mass of broom, Jerusalem Sage, pink and white Cistus, and other flowers, but the butterflies were limited to *Euchloë ausonia, Pontia daplidice, Pararge megera,* and a few wandering *Colias crocea* and *Vanessa cardui,* though on the way down we got a freshly emerged *Polygonia egea,* the Mediterranean Comma, of which we had previously seen only a worn-out hibernated example at Delphi, and elsewhere a few *Glaucopsyche alexis.* A few moths came to the hotel windows at night, including the small Noctuid *Omphalophana antirrhini* Hb., the Wave *Sterrha vulpinaria* H.-S. (which in England emerges in August), and a large *Gnophos.* I also took a single Burnet, a very large *Zygaena filipendulae* L., from a thistle, and one example of that attractive migratory Pyrale *Uresiphita gilvata* F.

From Tolo we went twice to the remains of the classical spa at Epidauros, 30 miles eastwards across the Argos Peninsula. The enclosures surrounding the great theatre were full of trees and flowers, but only very ordinary butterflies were seen. The commonest was *Colias crocea*: these were all worn females engaged in egg-laying on the vetches. All were of the typical form: we saw no f. *helice* there or anywhere else in Greece, in sharp contrast to our experience in south Spain at the same period in 1962, where it was almost as numerous as the type. I also took some *Melitaea phoebe* on the hill behind the theatre, and in a dry water-course a pair of *Callophrys rubi,* which surprisingly we did not see anywhere else.

The weather while we were at Tolo was better, but still unsettled. We used our only continuously sunny day for a visit to the prehistoric fortresses of Mycenae and Tiryns. At Mycenae I found a few *Philotes vicrama,* the east European counterpart of *P. baton,* just above the astonishing bee-hive tomb which is called variously the Treasury of

Atreus or the Tomb of Agamemnon. The ravine which flanks the cyclopean walls of the citadel was also full of butterflies, including worn *G. farinosa, P. egea,* both fresh and hibernated, *M. phoebe, R. orientalis,* and large colonies of *Polyommatus icarus* and *Aricia agestis.* Entomologically it was the best display since Delphi.

We left Tolo to drive to Athens on the Orthodox Easter Sunday—this year no less than five weeks later than Easter in England. The villages which we passed through were *en fête,* and it was interesting to see the Easter lambs being roasted whole on spits, surrounded by crowds of laughing and dancing people. We stopped near the top of the low pass between Argos and Corinth to try some collecting, but there were no butterflies of interest, though we saw a huge wild tortoise. Beyond Corinth the weather deteriorated, and we ate our sandwiches in the last of the sunshine beside a dry water-course on the motorway near Megara. There were a few butterflies about: my wife spotted a *Limenitis anonyma* Lewin, and I caught a couple of *R. orientalis* and some *G. alexis.* These were our last captures in Greece. We drove into Athens in a thunderstorm, and it rained for the rest of the afternoon and evening. The next day, most of which we spent on the Acropolis, and the excavation area below it, also began wet and, though it improved later, was never really warm or sunny. I took some fine photographs of the Parthenon rising above a foreground of open umbrellas! We left our hotel in Athens in the small hours of 2nd May and, gaining an hour on the change of time, we were in London Airport by 8 a.m. and at home in Bramley in time for a late breakfast.

It will be seen that, from a collecting point of view, this expedition was not an unmixed success, largely because of the poor weather. Forty-six species of butterflies were seen, including most of the specialities which I most wanted to get; but they were mainly in very small numbers, and I was not able to make much study of their habits. The Delphi area alone provided forty species, thirteen of which (*P. alexanor, Z. polyxena, P. napi, P. ergane, P. krueperi, P. mannii, A. grueneri, A. damone, M. trivia, L. thersites, L. dorylas, S. orbifer, E. marloyi*) were not seen elsewhere. All the other places we visited seemed to be vastly inferior in comparison with it, even where the weather was comparable. I suspect that a combination of altitude, southern aspect, soil, and reserves of moisture from the snows of Mount Parnassus gives Delphi advantages which, though they cannot be unique, are rare elsewhere in Greece. As regards the timing of our visit, if we had gone in May instead of late April we should have had a much better chance of good weather, but we should have missed the best of the flowers and should not necessarily have found a greater variety of butterflies. It is interesting to see that Mr. Mackworth-Praed, on his visit last year in the first fortnight of May, also noted forty-six species, of which thirty-two were the same as ours. He was too late for many of the Pieridae, but gained mainly on the Satyrids, Hairstreaks and Blues. A list of our own records follows:—

Erynnis marloyi Bdv. Hrizo, below Delphi, three.
Carcharodus alceae Esp. Mykonos, Delphi, Lidorikion, Olympia, Epidauros.
Reverdinus orientalis Rev. Olympia, Mycenae, Megara.
Spialia orbifer Hb. Delphi, one.
Papilio machaon L. General, but not numerous.

P. alexanor maccabaeus Stdgr. Delphi.
Iphiclides podalirius L. General, commoner than *P. machaon.*
Zerynthia polyxena Schiff. Delphi, one.
Leptidia sinapis L. Delphi, Lidorikion, Olympia, Epidauros.

Anthocaris damone Bdv. Delphi, fairly numerous.
A. cardamines graeca Vty. Delphi, Lidorikion, Epidauros.
A. grueneri H.-S. Delphi, few.

Euchloë ausonia Hb. General. Mostly of the pale summer form, but several fresh examples of the spring form were also taken.

Pontia daplidice L. General.
Pieris brassicae L. General, mostly f. *cataleuca* Rober.
P. krueperi Stdgr. Delphi, many.
P. rapae L. General.
P. mannii Mayer Delphi, worn.
P. ergane G.-H. Delphi, males numerous, females rare.
P. napi L. Delphi, two.

Colias crocea Fourc. General, mostly worn females, but fresh males at Mycenae; no f. *helice* seen.
Gonepteryx rhamni L. Delphi, very worn.
G. farinosa Zell. Delphi, Mycenae, very worn.
G. cleopatra L. General, mostly in rags.

Limenitis anonyma Lewin. Megara, one.

Melitaea trivia Schiff. Delphi, Hrizo, just emerging.
M. phoebe Schiff. Delphi; getting worn at Epidauros and Mycenae.
Vanessa cardui L. General, mostly singles and worn.
V. atalanta L. Athens, Delphi, Epidauros, singly.
Polygonia egea Cramer. Delphi, one worn; Tolo, several fresh; Mycenae, several both fresh and worn.

Libythea celtis Laich in Fuesslin. Mornos Gorge, abundant on road.
Pararge aegeria L. Delphi, Olympia, Epidauros.
P. megera L. General, mostly worn.
P. maera orientalis Stdgr. Delphi, Hrizo, Olympia.
Maniola jurtina L. Delphi.
Coenonympha pamphilus marginata Ruhl. General.
Callophrys rubi L. Near Epidauros, two fresh.
Lycaena phloeas L. Singly in several places.
Thersamonia thersamon Esp. Lidorikion, one female.
Lycaenopsis argiolus L. Delphi, Epidauros.
Philotes vicrama Moore. Mycenae, a few.
Glaucopsyche alexis Poda. Delphi, Olympia, Tolo, Epidauros, Megara.
Aricia agestis Schiff. Delphi, Olympia, Epidauros, Mycenae.
Polyommatus icarus Rott. General. Large, females often heavily suffused with blue, others wholly brown.
Lysandra thersites Cant. Delphi.
L. dorylas Schiff. Delphi, a pair.

REFERENCES

Durand, R. Bilan d'un Voyage en Grèce. 1961. *Alexanor*, **2** : 33-35, 93-96.
Johnson, Major Gen. Sir G. Greece, April 1964. *Ent. Rec.*, **76** : 187-189.
Mackworth-Praed, H. W. Butterflies in Greece, May 1966. *Ent. Rec.*, **79** : 74-81.
Polunin, O. & Huxley, A. Flowers of the Mediterranean, 1965. Chatto & Windus, London.

Straubenzee, Brig. Gen. C. van. Three Months' Butterfly Collecting in Greece. 1932. *Entomologist*, **65** : 154-159, 177-183.
Worms, C. G. M. de. Spring Butterflies in Greece, April 1963. *Ent. Rec.*, **75** : 233-238.

Folly Hill, Birtley Green, Bramley, Surrey. May 1967.

Diptera in Moray and Inverness

By R. M. Payne, F.R.E.S.

During the late summer of 1965 and again in 1966 I spent short holidays in north-east Scotland, and did a little collecting in Morayshire (Elgin). Some notes of the flies taken in this comparatively neglected county may be worth recording.

Lochindorb is one of the smaller inland lochs, situated amongst barren moorland at an altitude of 970 ft. A very brief stop on a wet day in August 1965 produced a pair of the Empid *Chelifera diversicauda* Collin and the small Tipulid *Gonomyia dentata* de Meij. from woodland undergrowth at the edge of the lake.

By sweeping on the banks of the river Spey near Grantown (alt. 600 ft.) in August 1965 I took *Nephrotoma flavescens* (L.), *Rhagio tringaria* (L.) and *Volucella bombylans* (L.), and at the same place a year later *Dicranota bimaculata* (Sch.), *Erioptera trivialis* Mg. and *Tipula montium* Egger. This last species is usually associated with upland localities, but perhaps it occurs at lower altitudes in north Britain.

A damp Alder copse near the Spey at Grantown produced on 12th August 1965 the following crane-flies:—*Limonia trivittata* Sch., *L. macrostigma* Sch., *Dicranomyia autumnalis* (Staeg.), *Taphrophila vitripennis* (Mg.), *Pilaria nemoralis* (Mg.) and *Erioptera lutea* Mg.; also the Ptychopterid *P. albimana* (F.) and the Empid *Holoclera flava* (Fln.).

One of the most fruitful areas we visited was the mixed deciduous and coniferous woodland along the Findhorn valley near Relugas (alt. c. 300 ft.). Here in 1965 I took the Tipulids *Dicranomyia mitis* (Mg.), *Limonia stigma* Mg. and *Ormosia similis* (Staeg.) (the latter in some numbers), and the uncommon Trichocerid *Diazosma hirtipenne* (Siebke), while on a rock by the river a single *Paradicranota brevitarsis* Bergroth was taken.

Further species taken in these woods in 1966 were *Crunobia straminea* (Mg.), *Ormosia albitibia* Edw., *Ula sylvatica* (Mg.), *Austrolimnophila ochracea* (Mg.), and the Empids *Holoclera culicina* (Fln.) and *Ocydromia glabricula* (Fln.).

A boggy corner of nearby Darnaway Forest, where there was a profusion of Giant Woodrush and ferns, produced a pair of *Molophilus appendiculatus* (Staeg.) in cop.

An abortive attempt to reach the sea through the planted labyrinths of Culbin Forest in August 1965 produced only two Syrphids from Hogweed flowers, *Syrphus glaucius* (L.) and *Cheilosia illustrata* (Harris). But in late August 1966 some pleasant hours were spent on the dunes at Covesea, where the red-legged *Bibio pomonae* (F.) was in flight, the Empids *Rhamphomyia variabilis* (Fln.) and *Hybos culiciformis* (F.) were swept from Marram grass, and the following species were taken from flowers of Common Ragwort:—Tipulidae: *Tipula paludosa* Mg. Empididae: *Empis tessellata* F., *E. punctata* Mg., *Rhamphomyia variabilis* (very abundant), *Hybos culiciformis*. Syrphidae: *Cheilosia bergenstammi* (Becker), *Eristalis abusivus* Collin, *E. aeneus* Scop., *E. arbustorum* (L.), *E.*

tenax (L.), *Helophilus trivittatus* (F.), *Syritta pipiens* (L.).

East Inverness—particularly the Aviemore district—has of course been very well worked over a long period by devotees of all Orders of Insects, but the following captures made in August 1965 and 1966 may be of interest:—TIPULIDAE: *Metalimnobia quadrinotata* Mg., a male on Birch leaves at Nairn, August 1965. *Limonia dilutior* Edwards, frequent on boggy heather moorland near Carrbridge, early August 1965. Edwards (1938, British Short-palped Crane-flies) says "among broom", but there was no broom in this locality. *Dicranomyia stigmatica* (Mg.), by sweeping marshy ground near Carrbridge, August 1966. *D. rufiventris* (Strobl), at boggy margin of Loch a'Chlachain, August 1966. *Dicranota exclusa* (Walker), abundant on Cairngorm, crawling about on the wet moss by waterfalls from 3600 ft. down to 1450 ft., August 1966. *Crypteria limnophiloides* Bergroth, a male in a clump of Male Fern in a wood by Loch Ness at Dores, August 1965. EMPIDIDAE: *Rhamphomyia albosegmentata* (Zett.), a male flying over moorland on Cairngorm, alt. 2300 ft., 25th August 1966. *Chelifera stigmatica* Schiner, at the edge of a bushy stream by Loch Ness, Dores, August 1966. *Trichopeza longicornis* Mg., in the Findhorn woods at Daltulich Bridge (Nairn), August 1966. SYRPHIDAE: *Arctophila fulva* Harris, in Pine woods at Nethy Bridge, August 1966. *Eristalis rupium* F., on Blackberry flowers at Nairn, August 1965. SCATOPHAGIDAE: *Scatophaga taeniopa* Rnd., on sheep dung at 3600 ft. on Cairngorm, August 1965.

I think it is also worth recording that I took a male of the uncommon crane-fly *Erioptera divisa* Walker from a Pine tree branch by Loch Leven, Kinross, on 30th July 1965. This is a striking little species, yellow with large black eyes and black palpi.

Westwood, Highwalls Ave, Dinas Powis, Glam.

Whole Hoggers and Hair Splitters

By FRANK BALFOUR BROWNE

I believe it was Darwin who thus classified systematists and hair-splitting as a serious problem in entomology. I have seen much of it in the coleoptera. I was stimulated to write about it when I chanced upon a paper by Mr. D. K. Kevan who, in my opinion, added to the hair-splittery by attempting to solve a problem of a group of species in the genus *Helophorus* (Hydrophilidae). Within the last few weeks I have found that he wrote a previous paper, only four months earlier, on *Helophorus aquaticus*, and I feel that I must also criticise that paper.

Helophorus aquaticus was named by Linnaeus in 1758 and it was not until 1868 that Thomson separated the smaller individuals as a distinct species. We still have coleopterists who regard it as var. *aequalis*! In the part of the 1965 E.M.M., which was published in May 1966, Mr. Kevan has set out his reasons for regarding *aequalis* as a separate species. Unfortunately, he quoted a statement of mine, made in 1958, that an odd small specimen among larger ones did "suggest to species hunters that there is another species". My meaning was that species hunters are always on the look out to make new species! Mr. Kevan should have included the previous part of my statement which reads: "It is seldom that more than one or two of the smaller specimens are found together but in a spot

where there are a number of larger specimens, an odd small one does suggest . . . " (1958: p. 98).

Mr Kevan mentions measurements he made in certain Silphid beetles (*Ptomaphagus*) comparing the body length with that of the aedeagus, and he showed that the smaller males had proportionately larger aedeagi than the larger ones. He compared this with similar measurements made on *H. aquaticus* and found that the proportional difference was greater. He seems to have assumed that he has found another species character. If such a type of character is to be of any value for distinguishing species, why did he not sieze upon Blackburn's statement (1876), which I quoted, to the effect that "the second joint of the hind tarsi [in *aequalis*] is a little larger, when compared with the third joint than in *aquaticus*"? Does this clash with the proportionate lengths of the aedeagus? Mr. Kevan sums up his measurement results: "When, therefore, one compares two beetles of the same size and supposedly of the same species, and finds that their aedeagi differ quite distinctly in size, there is immediately a *prima facie* case for considering the probability of two species being involved, and it is on the basis of this 'working hypothesis' that *H. aquaticus* and its alleged var. *aequalis* must now be considered".

There is nothing in all this to suggest that the size of the aedeagus has anything to do with species distinction. If he had carried it further and proved that there were two groups of intersterile individuals, he would have had evidence, but variation in the size of the aedeagus is as valueless specifically as variation in body size.

In *Hydrophilus piceus* the gut wanders round the abdomen in circles but the number of curls varies both in the sexes and within the sexes. The body length of the beetle varies between 37 and 48 mm., according to Fowler. If it is shown that the smaller individuals have the most curls in the gut, does this suggest two species under one name?

Mr. Kevan sketches other distinctive characters between the two forms and describes those given by Thomson as "adequate". These characters are: small size, darker colouring, less rounded sides of thorax, with pronotal surface less closely granular and depression across the bases of the elytra less marked, elytral interstices less raised. Not one distinctive character, all " more or less"! As to a difference in colour I quote my own statement on *aquaticus*: "it is of the usual colour of most of our species, varying from yellowish-testaceous to brown-testaceous, there being no tendency for the smaller specimens to be darker than the larger ones, as has been suggested where attempts have been made to retain the smaller specimens as a distinct species" (1958, p. 98). If Mr Kevan will go over his material—as I did after I had first read Thomson's characters—he will find that quite frequently where one of these characters is as Thomson stated, some at least of the others will not oblige.

The first use of the aedeagus as a specific character was made in the belief that each type was created to suit only one species of female, and although that idea may be occasionally correct, the aedeagus is still frequently relied upon as the determining factor. As a supporting character it is usually reliable.

In any genus as variable as *Helophorus*, stick to "species-groups" until ecology has settled the difficulty which is beyond the power of the systematists.

I had completed this note when the last part of the 1966 E.M.M. appeared, and this gives me an opportunity of commenting on some remarks by R. Angus (p. 269) in which he accepts Kevan's recognition of *aequalis* and gives a few observations upon the habitats of the two forms. "*H. aequalis* tends to replace *aquaticus* in weedy pools. *H. aquaticus* predominates in silt ponds and muddy fields but there is a considerable overlap in the habits . . . . A series collected in muddy field ponds on the Black Isle of Easter Ross proved to be this species [*aequalis*] though the habitat seemed more suitable for *aquaticus*".

These remarks are interesting as observations on the habits of the species, but are they of any value? After years of work on the water beetles I placed *aquaticus* in the detritus-pond community, but here we are told that it inhabits silt ponds and muddy fields and thus belongs to two different communities. Moreover, in all the years I collected, I have no recollection of finding *aequalis* except among *aquaticus* and I never found it in numbers. And yet we are now told that it tends to replace *aquaticus* in weedy pools. Angus makes statements about the habits of each species. Kevan stated that there are small *aquaticus* and large *eaqualis,* but Angus has obviously treated all large specimens as *aquaticus* and all small ones as *aequalis.*

29th May 1967.

A Review of the status of certain Scarabaeoidea (Col.) in the British Fauna; with the addition to our List of *Onthophagus similis* Scriba

By A. A. Allen, B.Sc., A.R.C.S.

The short list of recorded British species in this superfamily of the Coleoptera (better known to many as the Lamellicornia) is remarkable for the number of species—a dozen or so—whose status in our fauna is, or has been widely considered, open to question, and some of which have often been—or still are—omitted; whilst others of them, sometimes with hardly more justification, are retained. Examples occur in all the main divisions of the Scarabaeoidea represented here, except the Geotrupidae. A critical examination of the claims of such species to be regarded as British, so far as the often very scanty materials permit, will therefore not, perhaps, be uninstructive; and will, it is believed, lead in certain cases (though not many) to conclusions somewhat at variance with current usage. Such conclusions, however, seldom emerge with as much clarity as could be wished, or justify more than tentative suggestions for the future treatment of the species. For some of them it has been possible to provide a small measure of confirmation from records hitherto overlooked or unpublished, or only lately discovered; but for others, no new data have come to hand.

Besides dicussing these 'doubtful' species, the opportunity is taken of bringing the list up to date by the addition of one 'novelty' (a preliminary notice only).

The definitive list as at present constituted is taken to be that of Kloet and Hincks (1945). It is followed very closely by Britton (1956); who however omits *Saprosites mendax* Blkbn. and includes *Trichius*

zonatus Germ., unlike the former authors. Concerning the first of these species, Dr Britton has personally informed the writer that this omission was an oversight, and not intentional. As a second edition of the 1945 Check List is in preparation, it will be convenient to take the first edition of that work (rather than the 1956 Handbook, despite its more recent date) as a basis for any changes to be suggested. Such changes have been kept to a minimum, and are recommended only where the ascertainable facts seem thoroughly to warrant them. The idea of applying any sort of rule-of-thumb to reach a decision in difficult cases has been rejected in favour of judging each case purely on its own merits; thus, the known habits or Continental distribution of a species are taken into account in assessing the probalities of introduction, immigration and so forth.

A few species are treated, briefly as a rule, within brackets. These are species which have never, or at least not for a very long time, been included in British catalogues, and for which the evidence remains insufficient to admit them; but which none the less appear worthy of a passing mention, if only for the sake of completeness, or on grounds of general or historic interest. In addition, some early authors (notably Stephens) have recorded as British, often only doubtfully, other species or alleged species of which nothing further is now ascertainable; several of these records were probably erroneous. It would be pointless to include such species here.

A word must be added concerning extinct species, since some may hold that when a species is presumed to have died out it should be omitted from any list of the fauna. Such a course is obviously right when a list expressly purports to include only currently existing and encounterable species, or when a certain arbitrary date-line is set up and any earlier records ignored. But it seems to me that a catalogue of the entire known fauna of a given region should take a larger view, and include (marked as extinct, of course)[1] species known, or believed on reasonable evidence, to have bred here up to some time in the previous century—later than that it would seem premature to pronounce any species wholly extinct, at all events in the Coleoptera. It is illogical as well as inconvenient to omit from our list species still extant as documented specimens in our collections, especially if supported by published records, unless there are good grounds for doubting their authenticity or suspecting them of being mere importations. (I fancy that most lepidopterists would not take kindly to a proposal that *Lycaena dispar* Haw., for example, be struck off the British list because no longer to be found here!) The inclusion of such species, moreover, reflects more truly their geologically recent distribution. The fact that there are, in the Coleoptera, a host of possible cases too doubtful to qualify for admission is no reason for excluding the relatively few clear ones—two of which are examined in the present paper.

Lucanidae

Platycerus (or *Systenocerus*)[2] *caraboides* L.—This insect, which, as Fowler (1890: 7) remarks, was included in all our old catalogues, and is not uncommon over most of the Continent, was from about that time or

[1]Kloet & Hincks (p. lviii) rightly employ a special sign to denote extinct species, but I have not come across one instance of its use among the Coleoptera.

earlier relegated to the lists of doubtfully British species usually appended to such catalogues, and later dropped altogether. It is true that no capture since the eighteen-twenties appears to be on record. I believe there are coleopterists who regard this, and other species to which similar considerations apply, as having been probable introductions; however, while there are cases where this may be so (though proof is seldom possible), the present one can be shown to be most certainly not of their number. Even Fowler, who tended towards sceptism in such matters (cf. his comments on the British status of *Polyphylla*, quoted below) was inclined to regard *Platycerus* as 'very probably . . . really indigenous in our country, although very rare' (*l.c.*); and adduced the records of Stephens from near Bristol, Scotland, near Oxford, and the west of England. It will be of interest to enlarge upon these.

Curtis (1839) has the following note on the species:

> "The *P. caraboides* must . . . have appeared in plenty in this country many years back, as specimens were preserved in all the old cabinets. . . . It has . . . again appeared, having been observed in Aberdeen. Mr. Dale has also seen specimens taken by Mr. Waring of Bristol; and Mr. Hope informs me that one specimen was taken on the wing in Oxford".

Fortunately, some particulars of the Oxford captures—there would appear to have been at least four, not just one as implied by Curtis—are preserved. The source of them is the interleaved copy of Marsham's *Entomologia Britannica* which belonged to the Rev. F. W. Hope, and in which he noted with many circumstantial details the capture of numerous species of Coleoptera at Oxford between 1819 and 1822. J. J. Walker (1932: 71) quotes the entry under *Platycerus caraboides* as follows:

> "This species long doubted as a native of this country, was taken in July at Oxford not far from Witham, cut out of a dry and almost sapless oak. Another was taken flying not far from the city in 1830. I have heard it was taken near Eton by a Mr. Durell, and also flying in the High St. at Oxford. It has also been taken at Lord Abingdon's Park near Oxford".

For the following record—not, I believe, previously published—I am indebted to Mr. Colin Johnson. He informs me (*in litt.*) that there are two examples, damaged and of extremely ancient appearance, in the J. Ray Hardy collection at Manchester, with the data '*Platycerus caraboides* C. B. Shuck./Windsor, June 1827/very rare', in Hardy's handwriting. This interesting record, undoubtedly authentic, adds yet another great rarity to the large number already listed for that area. It can be associated with the Eton capture cited by Hope, though evidently not the same. In all probability these two are the only surviving British specimens with a definite locality attached. Others without data exist in, or derive from, various old collections—though not, I think, as many as Curtis's remark quoted above might lead one to expect.

In recent years, Continental coleopterists have recognized a closely

[2]There has been a great deal of vacillation amongst authors between the names *Platycerus* Geoff. (1762) and *Systenocerus* Weise (1883), depending on whether or not the older of them is to be regarded as valid. During the last decade or two there has been a slight preponderance in favour of the second; but on the other hand such a recent and weighty authority as Junk's Catalogue (Supplement, 1960) uses the first, for which reason it is provisionally adopted here.

allied species, *P. caprea* Deg., which has been much confused with *caraboides* in the past; the external differences are slight and rather comparative and are said to be not wholly reliable, but the aedeagus differs strongly in certain respects in the two species. I have extracted this organ from the single reputed British *Platycerus* in my collection (*ex* Janson, Bentley coll.) and, as expected, it agrees with the figure for *caraboides* in Hansen (1958: 160). As it is scarcely likely that both species inhabited Britain in comparatively recent times, and as examples I have seen in the Power and Stephens collections appear—as far as can be judged—conspecific with my own, we may reasonably assume the identity of our species to have been correctly stated.

The upshot is clear: if it is virtually certain that this attractive beetle has long ceased to breed in these islands, it seems equally certain on the evidence here presented that it was once a genuine native. In accordance with the principles already put forward to govern such cases, its name should appear in future catalogues or check-lists of the British Coleoptera. It must at one time have had a wider range in this country than any of our other three Lucanids (except, perhaps, *Sinodendron*), if the Aberdeen record is to be credited; and no clear reason for its extinction suggests itself.

Trogidae

Trox hispidus Pont.—The position of this species is frankly unsatisfactory. It has, though not invariably, still for the most part been more or less uncritically accepted as British up to the present time; yet, examining its 'credentials', one is led to the conclusion that its claim to be so considered is a good deal slenderer than that of certain others commonly excluded. Nor do the few specimens extant in old collections —I have failed to locate more than three—inspire greater confidence. Although there is one little-known and insecurely based modern record (*vide infra*), it has proved to be false, and our knowledge of this *Trox* as British appears to rest where it did when Fowler (1890: 46) wrote:

> "The species was introduced as British by Mr. Waterhouse on the authority of a specimen or specimens of which he did not know the locality, and there is also a specimen in the Rev. A. Matthew's [*sic*] collection, which was taken by the Rev. H. Matthews".

In the Champion collection at the British Museum (Nat. Hist.) is an old specimen placed over the name *hispidus*, labelled 'Ex coll. L[aundy] Brown', but without further data; it is in fact a typical *T. perlatus* Goeze—a species not added to our list until 1929 and seemingly unknown to Champion. Now *T. perlatus* is in Britain mainly a Dorset species (Purbeck Hills), so, in conjunction with what has just been said, it seemed in the highest degree likely that the Dorset specimen mentioned by Pearce (1926: 103) in a footnote as having been submitted to Champion and named by him as 'probably an abraded example of *T. hispidus*' would prove to be another *T. perlatus*. The Rev. C. E. Tottenham was so good as to send me for examination a number of *Trox* from the Cambridge Museum, mostly standing over the name *hispidus*, among which was this particular specimen (Tyneham, Dorset, 8.viii.1922, R. B. Benson), bearing also a label 'hispidus (abraded)/G. C. Champion/det. v.1925'. As expected, it is indeed another *perlatus* (but *not* abraded—very curiously, Champion must have missed the *black* setae which characterize the last-named,

those of *hispidus* being pale[3]). In consequence, this record must be expunged as applied to *hispidus*, and transferred to *perlatus*—for which it probably furnishes a new Dorset locality.

Oddly enough the Cambridge Museum material representing the former species comprised all the recorded British members of the genus! The genuine *hispidus* is a single specimen, rather small but in very fair condition except for the lack of hind tarsi, labelled 'Ex coll. G. R. Crotch'.[4]. There appear to be no British exponents of the species in the Oxford, Manchester, or Edinburgh Museums. In the British Museum there is a very old one in the Power collection, with labels '3 *hispidus* Laichart' and 'Power 96—69', which is correctly named; it seems just possible that it may be the Waterhouse example referred to by Fowler (or one of them if there were more). It remained to investigate the Matthews specimen—with the forlorn hope that some definite data might at last emerge! This was not to be, however. The three examples representing *T. hispidus* in that collection (obligingly procured by Dr. Britton) were, again, all of different species and without any indication of locality; the one genuine *hispidus*, in fair condition, being labelled only 'J. W. Douglas'. In view of the label it seems doubtful whether this can be the one stated by Fowler to have been taken by H. Matthews, and we are left as much in the dark as before.

Unless someone can produce more solid evidence, the case for this as a British species must be judged upon the facts here assembled—and there is no denying that it is a weak one. From their habits,[5] species of *Trox* are not likely to be accidentally imported; nor, one would think, to find their way from foreign collections into British ones, though perhaps this is more dubious. It would not be unreasonable to retain *T. hispidus*, but marked as requiring confirmation. However, in view of the lack of any published locality or sufficiently documented specimen, and pending a new capture or something more substantial in its favour than hitherto, I incline to the opinion that it should be omitted altogether.

Scarabaeidae

Onthophagus taurus Schreb.—A species whose precise British status is difficult to assess, though its occurrence in the past can hardly be doubted, and at least three definite localities have been cited. It is far more apt than the preceding one to have caught the eye of some of the old collectors visiting the Channel Islands or France, and to have ended

[3]Otherwise the two species are closely similar (cf. Britton, 1956 : 6), but I find that besides its average larger size, *perlatus* has the elytral tubercles shinier and proportionately larger.

[4]Crotch had very extensive relations with coleopterists on the Continent, so that British and foreign insects may have occasionally become mixed.

[5]Britton (*l.c.*) notes *T. hispidus* as 'very rare, in dried animal matter' but as occurring on the Continent in nests of birds of prey—giving very similar data for *perlatus*.

up, unlabelled and forgotten as to origin, in their (British) collections.[6] There is, however, another and likelier possibility—that of sporadic immigration from the areas mentioned—for the species (like *O. nutans* F.) is known to be partly migratory on the Continent. In that case it should continue to be taken here occasionally, whereas in fact there appears to be no trustworthy record for over 120 years; but this may merely signify a change in its migratory habits or distribution in those parts of Europe nearest to Britain, perhaps connected with climatic changes. (Something of the same kind must have taken place with the Carabid *Calosoma sycophanta* L., and probably a number of other species.) Locality-data attached to specimens in or derived from old British collections are entirely unhelpful, being either non-existent or giving Jersey as the source. (It must be stressed that the Channel Islands are outside the Britannic faunal area, a fact perhaps not always sufficiently realized.) Attention must therefore be focussed on the few published records. Most of the evidence for *O. taurus* as British is thus summed up by Fowler (1890: 12):

> "In dung; very rare and somewhat doubtfully indigenous; Brockenhurst and Lyndhurst, New Forest (Stephens); Exmouth, rare (Parfitt's Devonshire Catalogue, p. 68); the species is rather common in Jersey, and many of the specimens in our collections come from that and the adjacent islands".

This last is true, for instance, of the whole of the series in the Power and Dale collections. The original New Forest record is worth quoting; the fullest account I have seen is by Curtis (1839):

> "A male . . . was taken by a collector October 1, 1824, by the side of the New Park near Brockenhurst in the New Forest, Hampshire. It is more than probable that anyone finding the female of *O. taurus* in this country . . . would have taken it for *O. nutans*.[7] The collector who took the specimen figured, was directed by Mr. Stone, to whom it was sent, to search diligently for more, but not another could be found; it was far beyond the period for this genus . . . ".

[6]On the other hand, if this happened with the present species, why not equally with many other conspicuous ones more or less common in France, etc., but never recorded in Britain? It always seems to me that such considerations go against the theory of fraudulent importation from the Continent, and tend to support the genuineness of those which *were* so recorded.

[7]This species, for which, also, 20th century records are almost lacking, seems never to have been reported from either the New Forest or Devon. Normally developed males of *O. taurus*, of course, with their striking cephalic appendages, are unmistakable.

Current Literature

Proceedings and Transactions of the South London Entomological and Natural History Society, 1967, Pt. 2, contains a paper entitled "Studies and Suggestions on the Behaviour of Moths at Light", by J. D. Holloway, in which the subject is treated from many aspects and the results of experimental studies made between 1964 and 1966 are set down with explanatory

charts. The Rev. C. E. Tottenham writes an account of *Philonthus parcus* Sharp (Col., Staphylinidae), originally described from Japan, in Britain, with line drawings of genitalia details. Accounts of indoor meetings from 10th November 1966 to the Annual General Meeting, 26th January 1967. This includes the President's address, which is an account of the Natural History of the Petersfield district through the ages.

Transactions of the Newbury District Field Club, XI: 4 (8/6), contains a local list of the Macro-Lepidoptera of the district by Air Marshal Sir Robert Saundby. In this, he makes comparisons with the last printed local list, which was by Miss Mary Kimber, published in Vol. IV, 1895, by giving the present status of the insect alongside her remarks of seventy-two years ago.

Two interesting separates, received from Dr. Magne Opheim of Oslo are from *Opuscula Entomologica, 32, 1967,* on **The Norwegian Species of Bactra Steph. and Eucosma Hübn. (Lep., Tortricidae)** with distribution maps and anatomical details illustrating the text, and two halftone plates illustrating 9 Bactra and 7 Eucosma specimens. The other paper is from *Norsk Entomologisk Tidsskrift XIII, 1966,* is entitled **The Genus Titanio Hübner, 1825 (Lep., Pyralidae) in Norway,** and deals with the two species, *T. schrankiana* Hochenw. and *T. phrigialis* Hübn., which constitute the Norwegian representatives of this family. Genitalia details are illustrated by the author.—S. N. A. J.

The Observer's book of Pond Life (Second Edition). By John Clegg. 209 pp. with 73 plates, 32 of which in colour. Frederick Warne & Co., Ltd., London. 6/-. This little book bears the author's touch in putting this wide subject into so small a book. It is intended for beginners and general nature-lovers, but it is also most useful for the specialist in one order or section of the study of pond life who likes to place other creatures and plants coming before his notice during his collecting.

The Introduction describes the freshwater habitats as Ponds, Streams and Rivers, and Lakes, and it points out the animal and vegetable life and the chemical and food requirements of both. There follows a key for the identification of selected groups for use after locating the groups of one's catch from the plates. This key has drawings of certain features mentioned to assist the worker in this operation. The next section deals briefly with the various groups and finishes with a summary of the main animal groups giving examples and the plate number where they may be seen. The plates follow, and as is customary with this author, the items figured are noted on the opposite page with short descriptive notes, and among the plates are found an illustration of collecting equipment, also a diagram showing the various zones of a pond and another showing the inter-relation of the various pond organisms. There is a list of 25 books for further study, and an index. The inside covers at both ends carry an illustrated key to the commoner aquatic animals, including molluscs, mites and spiders, worms, leeches and insects, including their larvae.

The book is well printed and bound in paper covered boards. The paper is of good quality and the colour work is excellent in some plates and adequate in all. The book's size makes it easy to include with one's collecting apparatus, and the price brings it within the reach of all.—S. N. A. J.

Obituary

ROBERT GEOFFREY TODD (1886-1967)

On 12th April, 1967, there passed away at West Runton, in Norfolk, one of the most ardent and colourful figures in the world of British Entomology. Though Geoffrey Todd was perhaps not too well-known to the general fraternity of field collectors, he was none the less one of its keenest members.

It was when he was at Merchant Taylors School that the flair for collecting lepidoptera began. While there he was a very good exponent of the game of Rugby football which probably helped to train him for the somewhat hard and tough life he was to lead with great zeal until his 82nd year. The 1914-18 War broke out soon after he joined his father's firm of solicitors. The call to arms took him to East Africa where, as he used to tell, his rifle helped to fill the daily pot with various kinds of game, and no doubt this side of the campaign set him on the path of becoming one of the best wildfowlers of his day, since he took up this line on being invalided out of the army. He settled in Norfolk at Wells-next-Sea and for a great many years used to combine his prowess with the gun with that of the collecting net. He collaborated, too, with the late Mr. H. M. Edelsten in working out the life histories of some of the more obscure fen lepidoptera, and in his latter years was a very successful breeder of *Hydridulla palustris*. He also bred many generations of *Arctia caja*, producing a strain with very suffused markings. Some of this series and several other rarities and aberrations he took are now in the National Collection at Tring. He was indefatigable in the field to the very end. He used to run a mercury vapour trap continuously while at Wells and later at West Runton where in 1966 he was trying out a much more powerful light which he claimed attracted ten times as many insects as the conventional mercury vapour bulbs. Among the rarities he took in North Norfolk was a *Conistra erythrocephala*, while in the early 1950's I discovered two examples of the little Nolid moth, *Celama centonalis*, among his spares he had taken on the local sandhills and had not recognised. A fine specimen of the rare *Plusia aurifera* graced his trap at West Runton in his latter years.

He indeed combined the qualities of a great sportsman with those of a first-class naturalist. He was altogether a most charming person who enjoyed life to the full and who will be much mourned by all who had the privilege of knowing him.

C. G. M. de W.

Current Notes

I Have received literature concerning the transparent plastic, Acrulite Transparent Embedment Resin, and it occurs to me that the ingenuity of the younger generation of entomologists may find many uses for this material outside the preservation of specimens as "paper weights," which is now a practice of some years' standing.

The three-dimensional mounting of genitalia dissections is one use which occurs to me. I am informed that three-dimensional mounting is a necessity where the Nepticulina are concerned, and I have a feeling that three-dimensional mounting could spread with advantages to other Lepidoptera genera.—S.N.A.J.

coll.). Penshurst (R. E. E. Frampton MS.). Edenbridge, annually (F. D. Greenwood). Benenden (G. V. Bull). Great Chart (Scott (1936)). Aylesford (G. A. N. Davis).

12. Long Rope, Ham Street, one, September 9, 1949 (C.-H.). Ashford, to sugar in spring and autumn; one, April 2, 1954 (P. Cue). Willesborough, one, May 10, 1954, one, May 23, 1955, one, June 1, 1957; Wye, one, October 11, 1954 (W. L. Rudland). Orlestone Woods, one at light, 1956 (R. F. Bretherton).

13. Tunbridge Wells (E. D. Morgan); (Hammond and Smith, *loc. cit.*).

14. Tenterden, abundant (Stainton, *Man.*). Woodchurch (Scott (1936)). Sandhurst, at light and sugar; one, February 1952 (G. V. Bull). Tenterden, 1960 (C. G. Orpin).

16. Folkestone, one, May 26, 1954 (A. M. Morley).

Variation.—In my series, which is much too short for this variable insect, there are besides the type, specimens of ab. *unicolor* Tutt, from West Wickham and Broad Oak (C.-H.). Allchin (*Ent. week. Int.*, **8**: 5) states that in August 1859, he took a "long series" in Kent, which was "very varied".

First Record, 1845: Lewisham (Stainton, *Zoologist*, 1089).

[**Plathypena scabra** F.: Black Snout.

Suspected importation.

1. Lee, one taken by C. G. Bruce in the m.v. trap in his garden, on August 31, 1956 (Bruce, *Entomologist*, **94**: 37; Bradley, *Ent. Gaz.*, **11**: 194; Mere, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1960: 24).]

Schrankia taenialis Hübn. (**albistrigalis** Haw.): White-lined Snout.

Native. Woods, copses, carr; foodplant unknown.

1. West Wickham Wood, July (Douglas, *Zoologist*, 3183). Bexley Park Wood, three, July 18, 1885, one, July 14, 1894 (Fenn, *Diary*). Chislehurst (*V.C.H.* (1908)).

3. Thornden Wood, July 29 (about 12 at sugar), 30 (7), 1865 (Fenn, *Diary*). East Blean Wood, July 3 (1), 12 (1), 17 (1), 20 (4), 1904; July 8 (numerous), 15 (3), 1905 (J. P. Barrett coll.). Blean, one, August 4, 1939; Herne, one, July 4, 1943 (P. F. Harris). Den Grove, three, 1938 (C.-H.).

4. Ham Fen, one, July 11, 1891 (Fenn, *Diary*; idem, *Ent. Rec.*, **2**: 203) ("Deal" (E. & Y. (1949)), may refer).

6a. Darenth Village* (Stephens, *Haust.*, **4**: 21). Darenth Wood, September 1845, at sugar (Stevens, *Zoologist*, 1787); September 1846 (Grant, *Zoologist*, 1789). Greenthithe*, September 1846 (Grant, *Zoologist*, 1789). Near Stone Wood*, in a copse, one, August 4, 1888 (Fenn, *Diary*). Swanscombe Wood, three, August 1, 1903 (H. C. Huggins). North Kent* [Chattenden], 1875 (Tugwell, *Entomologist*, **8**: 293). Chattenden Roughs; Mark Oak Wood (Chaney (1884-87)). Chattenden, a few, worn, July 27, 1908 (Ovenden, *Ent. Rec.*, **21**: 33).

7. Wigmore Wood (Chaney (1884-87)). Westwell, July 22, 1955 (1), June 27 (fresh ♀), July 22 (worn ♂), 1957, all at light (E. Scott); July 24, 1963 (1) (C.-H.).

8. Folkestone* (Ullyett (1880)).

10. Penshurst* (R. E. E. Frampton MS.).

11. Wateringbury, one (E. Goodwin coll.); two, July 4, 1959 (C.-H.).

12. Ham Street, June 30, 1935 (A. J. L. Bowes); one, July 20, 1948, by A. M. Morley (Scott (1950)); one at sugar in Orlestone Woods, July 28,

1956 (Bretherton, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1956: 21); one, July 28, 1962, in Long Rope (C.-H.).

14. Knock Wood, Tenterden, five, c. 1855 (Beale, *Diary*; idem, *Zoologist*, 4130).

First Record, 1834: "A scarce insect, found occasionally within the metropolitan district, in the vicinity of Darenth village" (Stephens, *Haust.*, **4**: 21).

S. costaestrigalis Steph.: Pinion-streaked Snout.

Native. Heaths, bogs, marshes; foodplant unknown.

1. West Wickham, one, August 25, 1846 (Stainton, *Zoologist*, 1791) Pauls Cray Common, two, August 3, 1887, one, July 21, 1888, one, June 10, 1890, one, June 19, 1890, one, July 28, 1894 (Fenn, *Diary*) ("Chislehurst" (*V.C.H.* (1908)), may refer). Chislehurst, one, 1898, fourteen, 1910 (R.C.K.)

3. Thornden Wood, three, July 30, 1865 (Fenn, *Diary*). Canterbury, six, July 1880 (J. P. Barrett coll.).

4. Ham Fen, one, July 2, 1955 (C.-H.).

6. Springhead, not uncommon at watercress swamp, August 22, 1912, June 13, 16, 1913 (H. C. Huggins).

6a. Kent [Chattenden?]* several, August 1859 (Allchin, *Ent. week. Int.*, **8**: 5); 1875 (Tugwell, *Entomologist*, **8**: 293). Chattenden Roughs, at sugar, not common (Chaney (1884-87)).

8. Folkestone Warren, one (Knaggs (1870)).

12. Long Rope, Ham Street, one, September 10, 1949 (C.-H.). Hothfield, June 27, 1960; September 1, 8, 10, 1961 (P. Cue); July 23, 1961, "not uncommon in the long grass and rushes" (Scott, *Bull. K. Fld. Cl.*, **7**: 32).

13. Pembury, occurs commonly (Stainton, *Man.*).

15. Dungeness, August 3, 1937 (A. J. L. Bowes); one, 1953 (R. Ellison, *teste* A. M. Morley); five ♂♂ at sugar, September 26, 1953, mostly worn (C.-H.); one, September 22, 1955 (E. C. Pelham-Clinton).

Variation.—The fifteen specimens in R.C.K. from Chislehurst are labelled as ab. *monotona* Lempke.

First Record, 1847: West Wickham (Stainton, *Zoologist*, 1791).

Zanclognatha tarsipennalis Treits.: Fanfoot.

Native. Woods, plantations, hedgebanks, gardens, etc.; on raspberry, bramble. Recorded from all divisions, except 4, 9, 15. "Generally abundant" (*V.C.H.* (1908)).

The *V.C.H.* assessment is unsupported by the records. The moth is of frequent occurrence, but I am unaware of a single instance of real abundance. It often occurs at light, and is noted singly or in small numbers at dusk or from being disturbed from cover by day. It has also been observed, though rarely, at sugar, as at Wigmore Wood (Chaney (1884-87)), and at buddleia, at Ashford, August 17, 1938 (E. Scott), and Broad Oak (C.-H.). At Bromley, D. R. M. Long's m.v. trap counts for 1960-65, are: 1960 (32), 1961 (9), 1962 (27), 1963 (38), 1964 (35), 1965 (37); with earliest and latest dates, June 16, 1960, and 1964, and September 1, 1962; and maximum daily total, eight, on July 10, 1960.

Theobald (*J. S.-E. Agric. College, Wye*, 1904 (13), 129) states that [in Kent] the "chief foodplant of the caterpillar is the raspberry, upon which it frequently occurs in small numbers"; and adds, it "is found in September and October, and mostly feeds amongst dried leaves. The pupa is formed

in a cocoon amongst leaves on the canes". Tutt (1896, *Br. Moths*, 321) has the following generalisation: "The larva feeds on raspberry, and hence, in the fruit-growing districts of Kent, the species is very abundant". D. R. M. Long has taken the larva on bramble, at Bromley.

First Record, 1834: Darenth Wood (Stephens, *Haust.*, **4**: 17).

Z. nemoralis F. (**grisealis** Schiff.): Small Fanfoot.

Native. Woods, copses, parks, bushy places, etc.; on *Clematis vitalba*. Frequent and recorded from all divisions, except 4, 15. "Generally common" (*V.C.H.* (1908)).

The moth is evidently fairly generally distributed, and its range extends to the borders of the metropolis, where A. A. Allen notes it as not uncommon in his garden at Blackheath, amongst brambles, etc. At Bromley, D. R. M. Long's m.v. trap counts show it to be rather less numerous there at light than its congener *Z. tarsipennalis* Treits.; with earliest and latest dates, June 7, 1961, August 24, 1965; and maximum daily total, six, July 3, 1964.

A. R. Kidner (*Diary*) records three larvae on *C. vitalba*, at Bexley Park Wood, August 27, 1921.

Variation.—South (*Entomologist*, **44**: 1, fig.) recorded a ♀ ab., taken by P. Richards, at Wye, June 3, 1910, which Cockayne (*Ent. Rec.*, **63**: 164) named *approximata*.

First Record, 1834: "Open parts of Darent and other woods" (Curtis, *Br. Ent.*, 527).

Z. cribrumalis Hübn. (**cribralis** Hübn.): Dotted Fanfoot.

Native. Marshes, ditches; foodplant unknown.

Range very restricted in Kent, being only recorded from between Erith and Cliffe, and from about the estuary and lower valley of the Stour.

2. Dartford Marshes, one, July 20, 1887, six, July 6, 1889, five, July 15, 1890 (Fenn, *Diary*). Shorne Mead, common, c. 1910 (H. C. Huggins); July 8, 1927 (F. T. Grant). Greenhithe* (*V.C.H.* (1908)).

4. Ham Fen, July 14, 1891 (Fenn, *Diary*; idem, *Ent. Rec.*, **2**: 204). Minster, two, July 10, 1913 (H. G. Gomm, *Diary*). Westbere, ♀, July 24, 1946 (C.-H.). Stoneless, between Ebbsfleet and Richborough, many flying at dusk, a high proportion of which were worn, July 1, 1950; several, June 16, 1952 (C.-H.). Sandwich, one, July 30, 1951, between the town and sandhills (W. D. Bowden).

6. Springhead, common, c. 1910 (H. C. Huggins).

First Record, 1887: Dartford Marshes (C. Fenn, *Diary*, 20.vii.1887).

Paracolax derivalis Hübn.: Clay Fanfoot.

Native. Woods; on oak. Scarce in W. Kent (v.-c. 16).

1. Bexley neighbourhood; Woolwich (Stephens, *Haust.*, **4**: 16). Birch Wood, one, c. 1829, by Mr. Bentley (Chant, *Ent. Mag.*, **1**: 213). Joydens Wood, one, July 7, 1952 (K. H. Hyatt). Farningham Wood, one, 1952 (B. K. West).

3. Herne Bay, one, August 1, 1864 (Cruttwell, *Young England, per Ent. Ann.*, 1865: 113); occasionally (D. G. Marsh). Near Canterbury (Parry, *Entomologist*, **5**: 394). Bysing Wood (H. C. Huggins). East Blean, 1922, Trenley Park, three, July 1, 1921, two, July 18, 1923 (H. G. Gomm, *Diary*). Mincing and Thornden Woods (A. J. L. Bowes). Little Hall Wood, 1940:

Den Grove; West Blean, and adjacent woods; in small numbers regularly (C.-H.).

4. Ickham, several, 1954-59 (D. G. Marsh).

5. Halstead (R. E. E. Frampton MS.). Meanfield Hill, Shoreham, four larvae beaten off oak, September 29, 1950 (H. E. Hammond).

6. Otford, 1955 (W. B. L. Manley, in de Worms, *Lond. Nat.*, 1955: 74).

6a. Collyers Wood, Greenhithe, one, August 9, 1832 (Chant. *Ent. Mag.*, **1**: 213). Darenth Wood, 1836 (*Ent. Mag.*, **4**: 155); (E. J. Hare).

7. Long Beech Wood, July 29, 1939 (C.-H.). Westwell, June 30, 1949 (E. Scott).

8. Dover (Stephens, *Haust.*, **4**: 16); one, in Folkestone Road, Dover, July 13, 1905 (H. D. Stockwell, *Diary*; Stockwell coll.). Folkestone* (Ullyett (1880)). Near Barham, not uncommon; Deal* (E. & Y. (1949)).

10. Seal Chart, one, 1951 (G. A. N. Davis).

11. Aylesford, one, 1954 (G. A. N. Davis). Wateringbury, one, July 25, 1953 (C.-H.). Hoads Wood (P. Cue, *teste* E. Scott); one August 2, 1936 (R. G. Chatelain). Sevenoaks Weald, ♂, at m.v.l., September 7, 1960 (E. A. Sadler).

12. Ham Street Woods.—Abundant at light, July 22, 1934 (A. J. L. Bowes, *Diary*); common (Scott (1936)); annually in Long Rope and adjacent woods, at light and disturbed by day (C.-H.); abundant, July 28, 1956 (R. F. Bretherton). Ashford Town, July 19, 1954 (P. Cue). Brook* (C. A. W. Duffield). West Ashford, several at light, 1958 (M. Enfield). Willesborough, 1954 (1), 1956 (6), 1957 (8), 1958 (3), 1963 (3); Wye, 1953 (2), 1954 (2), 1955 (2) (W. L. Rudland).

13. Tunbridge Wells district*, scarce (M. M. Phipps, in Knipe (1916)). Goudhurst, three at light, 1952 (W. V. D. Bolt).

14. Tenterden, not uncommon (Beale, *Zoologist*, 4130). Great Heron Wood, about twelve, July 24, 1949 (C.-H.).

16. Folkestone Town, one, August 7, 1953 (A. M. Morley).

VARIATION.—Ab. *approximata* C.-H., holotype ♀, Ham Street, 1956 (C.-H., *Entomologist*, **94**: 283). In R.C.K. are the following abs.:—*suffusa* Lempke, two, Ham Street, 1948; *latelineata* Lempke, one, Ham Street, 1948; *obsoleta* Lempke, one, labelled "F. Bond coll., Fordwich, Kent"; *trans. ad signata* Lempke, one, Ham Street, 1948.

FIRST (PUBLISHED) RECORD, 1832: Kent (Rennie, *Conspectus*, 146).

Herminia barbalis Clerck: Common Fanfoot.

Native. Woods, copses; foodplant unknown. Much scarcer in W. Kent (v.-c. 16), though formerly plentiful there. Rare or extinct in 1. Unrecorded from 13, but unlikely to be absent.

1. West Wickham, May-June 1859 (26) (Allchin, *Ent. week. Int.*, **8**: 5); two, June 1, 1861 (Fenn, *Diary*); 1862 (Wormald, *Week. Ent.*, **1**: 142). Wilmington Wood (Leigh, *Week. Ent.*, **2**: 134). Sydenham, two, c. 1888 (Sellon, *Ent. Rec.*, **2**: 164). Shooters Hill (J. W. Tutt, in *Wool. Surv.* (1909)). Eltham (A. H. Jones, in *Wool. Surv.* (1909)). Abbey Wood, one, 1952 (J. Green, *teste* Showler, *Ent. Rec.*, **68**: 168).

3. Bysing Wood (H. C. Huggins). West Blean Wood, June 2, 1932 (W. E. Busbridge, *Diary*). Blean, June 20, 1955, abundant (R. F. Bretherton). Broad Oak, plentiful and of regular occurrence in all woods in the vicinity (C.-H.).

4. Plucksgutter, one, June 9, 1945 (W. D. Bowden). Ickham, several, 1954-59 (D. G. Marsh).

5. Westerham (R. C. Edwards).

6. Dartford* (W. West, in *Wool. Surv.* (1909)). Greenhithe* (*V.C.H.* (1908)). Clay Lane Wood (H. C. Huggins). Pinden district, in woods* (E. J. Hare). Trottescliffe (McDermott, *Proc. S. Lond. ent. nat. Hist. Soc.,* 1957: 70).

6a. Darenth Wood (see *First Record*); June 21, 1862 (Fenn, *Diary*); fairly common, 1910 (H. C. Huggins). Swanscombe Wood, twelve, 1848 (Hodgkinson, *Zoologist,* 2328). Chattenden, June 2, 1869 (J. J. Walker MS.); two, June 18, 1884, four, June 8, 1889 (Fenn, *Diary*); not common (Chaney (1884-87)).

7. Kings Wood (Scott (1936)); June 24, 1951 (W. D. Bowden). Challock Woods (Scott (1964)).

8. Folkestone Warren (Knaggs (1870)). Near Deal* (Shepherd, *Entomologist,* **17**: 138). Elham Park Wood, one, July 3, 1926, at acetylene light; Elham, two, June 22, 1933, four, July 7, 1934; Atchester Wood, Selling, two, at acetylene light, July 18, 1931 (W. E. Busbridge, *Diary*). Covert Wood, June 10, 1935 (J. H. B. Lowe); June 13, 1949 (G. H. Youden). "Comes to light in the woods S.W. of Barham" (E. & Y. (1949)); probably refers to the Covert Wood and Elham localities (C.-H.).

10. Westerham (R. C. Edwards); 1951 (Leston, *Proc. S. Lond. ent. nat. Hist. Soc.,* 1951-52: 72).

11. Aylesford (G. A. N. Davis). Hoads Wood, May 29, 1949 (E. Scott); one, June 15, 1955 (W. L. Rudland).

12. Ham Street (Scott (1936)); of regular occurrence and fairly numerous in the Orlestone Woods (C.-H.); June 2-4, 1950, July 1, 1954, June 1-2, 1956, in Orlestone Woods (R. F. Bretherton); common in Orlestone Woods, 1959-60 (M. Singleton); June 15, 1962 (R. G. Chatelain). Ashford Town, c. 1953 (P. Cue). Brook* (Scott (1936)).

14. Tenterden, very common (Stainton, *Man.*). Woodchurch (Scott (1936)).

16. Folkestone, one on fence, June 24, 1942 (A. M. Morley).

VARIATION.—In R.C.K., is ab. *demaculata* Lempke, one, "S.E. Kent 6.1922 W. G. S[heldon]".

FIRST RECORD, 1834: "Extremely common in the woods in the vicinity of the metropolis, as at . . . Darenth" (Stephens, *Haust.,* **4**: 15).

Laspeyria flexula Schiff.: Beautiful Hook-tip.

Native. Woods, old orchards, parks; on "lichen".

1. Lewisham (see *First Record*). West Wickham (West, *Ent. Rec.,* **18**: 230); one, at m.v.l., 1958 (C.-H.); a few (R. F. Birchenough, in de Worms, *Lond. Nat.,* 1955: 72). Orpington, 1949 (L. W. Siggs). Lee, two, 1952 (C. G. Bruce). St. Mary Cray, one at light, July 1, 1964 (R. G. Chatelain). Bromley, July 29, 1962 (1), July 20, 1963 (1), August 8, 1965 (1) (D. R. M. Long).

3. Den Grove, one, July 14, 1938, one, June 25, 1940; Broad Oak, one, July 11, 1946, one, June 22, 1952 (C.-H.). Herne Bay (D. G. Marsh).

4. Ickham, several, 1954-59 (D. G. Marsh).

5. Halstead (R. E. E. Frampton MS.). Westerham (R. C. Edwards). Lullingtone Park, a larva beaten from a hawthorn bush (lichen on ?), 1959 (D. R. M. Long).

6. Luddesdown (H. C. Huggins). Wrotham, 1947 (W. A. Cope). Shore-

ham, August 2, 1962 (1) (C. G. Bruce). Pinden, one, July 4, 1957 (E. J. Hare, in de Worms, *Lond. Nat.*, 1959: 116).

7. Westwell, July 15, 1934 (A. J. L. Bowes). Boxley (A. H. Harbottle).

8. Elham, one, July 6, 1934 (W. E. Busbridge, *Diary*). Brook* (Scott (1936)). Ewell Minnis; St. Radigund's; Wingmore (E. & Y. (1949)). Wye* (Scott (1950)). Dover, several, 1954 (B. O. C. Gardiner). Betteshanger, July 6, 1957 (R. F. Bretherton). Brook, one, 1959 (M. Singleton); one, 1960 (M. Enfield).

10. Westerham* (Gorham, *Ent. week. Int.*, **7**: 28). Sevenoaks (*V.C.H.* (1908)). Brasted, at light (R. M. Prideaux).

11. Yalding, occasionally at light (Reid, *S. east. Nat.*, 1904: 52). Shipbourne, one, 1910 (Buxton, *Ent. Rec.*, **23**: 314). Edenbridge, 1930, 1933 (F. D. Greenwood). Hoads Wood (Scott (1936)); larvae on lichen, c. 1953 (P. Cue). Tonbridge, one larva on lichen on hawthorn, 1951 (H. E. Hammond). Aylesford (G. A. N. Davis). Sevenoaks Weald, two, June 22-July 3, 1959, four, July 1-29, 1960 (E. A. Sadler).

12. Ham Street.—July 1934, June 30, 1935 (A. J. L. Bowes); comes regularly to light in Orlestone Woods (C.-H.); Faggs Wood, 1960 (Scott, *Proc. S. Lond. ent. nat. Hist. Soc.*, 1960: 87). Chartham (P. B. Wacher). Wye, July 10-August 7, 1953 (16), July 20-August 3, 1954 (7), July 10-August 2, 1955 (3), July 14-August 10, 1956 (7); Willesborough, July 12, 1955 (1), July 13-31, 1956 (10), June 29-August 6, 1957 (5), July 9, 1958 (1), August 8-15, 1963 (3), July 19, 1964 (1) (W. L. Rudland). Willesborough, one, 1961; West Ashford, fairly common, 1961 (M. Singleton). Ashford Town, common in garden, larva on lichen on apple trees; Ashford Warren, larvae on broom, 1957 (P. Cue).

13. Pembury (Stainton, *Man.*). Tunbridge Wells (E. D. Morgan); 1957-58, two or three (L. R. Tesch, *per* C. A. Stace). Goudhurst, common (W. V. D. Bolt).

14. Tenterden, one (Beale, *Zoologist*, 4130). Sandhurst, at light (G. V. Bull). Hawkhurst, six at light, 1952 (B. G. Chatfield).

15. Dymchurch, three, 1952 (Wakely, *Ent. Rec.*, **65**: 44).

16. Folkestone, one, 1951 (Morley, *Ent. Rec.*, **64**: 171). Sandgate, 1961 (1) (N. Reay-Jones).

First Record, 1845: Lewisham (Stainton, *Zoologist*, 1894).

EXCHANGES AND WANTS

Wanted.—Part 6, Vol. 4; Parts 2, 3, 7 and 8, Vol. 5; Part 1, Vol. 15; of "The Entomologist's Record".—*State price to Box 172, 'The Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

Wanted.—The Editor would be willing to buy a few clean, unbound, copies of the following at published prices: Vols. 5, 33, 35, 36, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57, 62, 63, and 77.—*Replies to S. N. A. Jacobs, 54 Hayes Lane, Bromley, Kent.*

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION
(Founded by J. W. TUTT on 15th April 1890)

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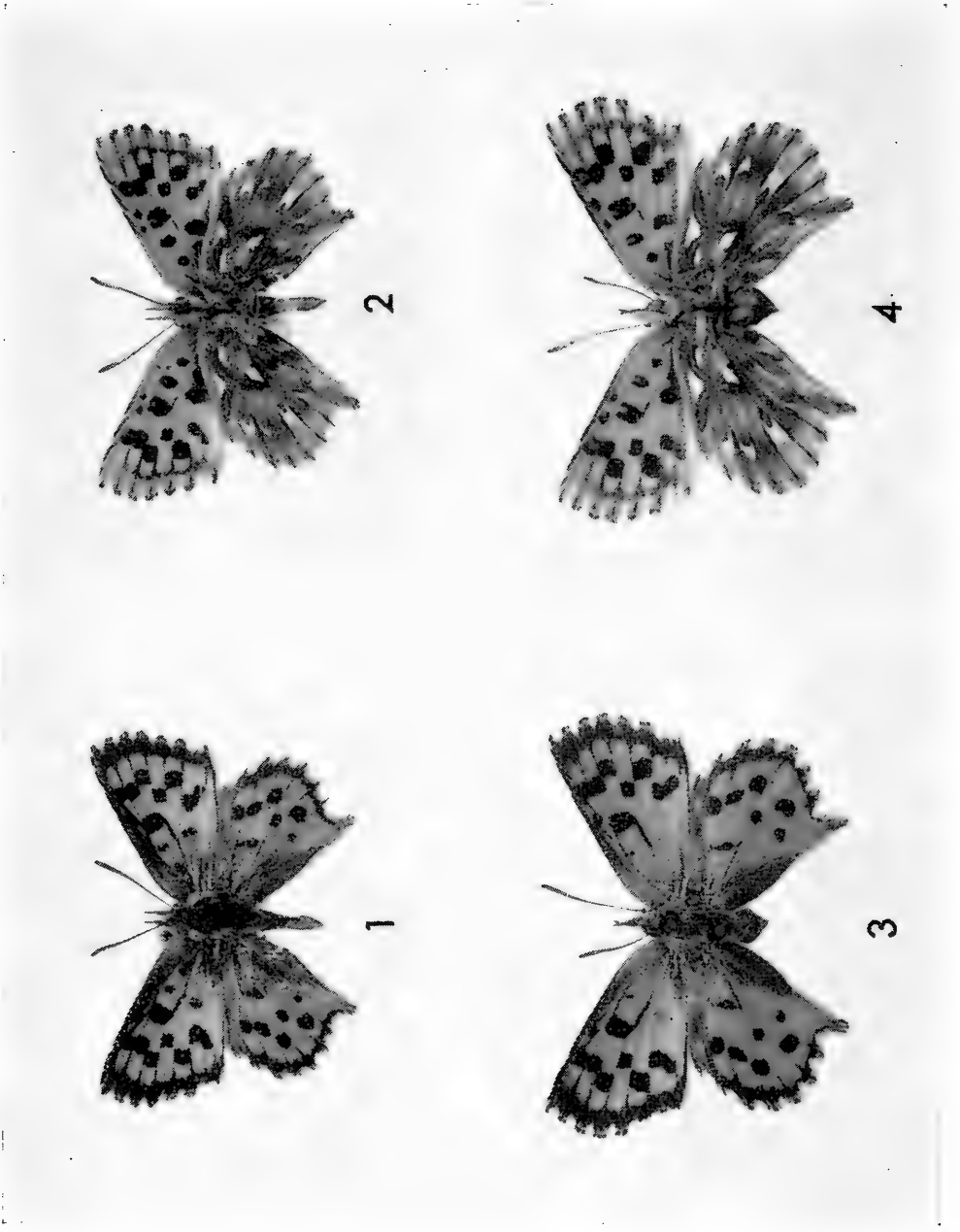


Poecilmitis turneri amatola subsp. n.

Fig. 1. ♂ Holotype (upperside) B.M.(N.H.) Neg. No. 45325.
Fig. 2. ♂ Holotype (underside) B.M.(N.H.) Neg. No. 45326.
Fig. 3. ♀ Allotype (upperside) B.M.(N.H.) Neg. No. 45327.
Fig. 4. ♀ Allotype (underside) B.M.(N.H.) Neg. No. 45328.
Figures approximately 1.8 times natural size.

Some Observations on *Poecilmitis turneri* Riley* (Lepidoptera : Lycaenidae), with a description of a new race

By C. G. C. Dickson and J. C. McMaster

When studying *Poecilmitis turneri* Riley it is found that marked variation occurs in this butterfly through its wide range in the Cape Province (the extreme eastern end of which actually penetrates Basutoland (Lesotho)), with considerable divergence from the nominate race, from Matjesfontein, taking place in the more easterly portion of the Eastern Cape Province. The butterfly is very localised and its distribution is very far from continuous, extremely wide gaps occurring between its habitats in much of its range from west to east, judging by observations which have been made up to the present. As the populations at either end of its range are not linked by contiguous, intervening ones, the former are effectively separated from one another and must have been so over a prolonged period. The butterfly is exacting as regards its type of habitat and prefers elevated situations. In the Western Karroo it has been found on rocky ridges (generally their slopes) where its food-plant, *Zygophyllum* sp. (Zygophyllaceae), a succulent-leaved shrub, generally with yellow flowers, has been growing in some profusion.

Specimens of *P. turneri* which have been taken at Karbonaatjes Kraal, beyond the top of the Hex River Pass, near Matroosberg (Triangle) Railway Station, and on Tafelberg, have been the same as the Matjesfontein ones, as also have been examples from Oudtshoorn. The butterfly has been found too on the hills above the Huis River Pass, W. of Calitzdorp. From personal observations, the flight-period extends from early September to late April, but under particularly dry conditions the insect may not be found continuously throughout this period.

The Eastern Cape representative of *P. turneri*, of which a description has been prepared, is sufficiently distinct from specimens from the type-locality (Matjesfontein) as to constitute another easily recognised race of this butterfly.

Poecilmitis turneri amatola subsp. nov.

Male.

The forewing is more elongated than in *P. turneri turneri* Riley and is of a less "square" shape.

Upperside.

Forewing. The white dashes on costa, towards the apex, more distinct than in nominate race (in which they are often absent, or virtually so); the white divisions of the cilia, as a whole, more clearly defined and more pointed inwardly.

Hindwing. Black spotting about as well developed as in forewing (in nominate race frequently less so, in the males); white spaces of cilia alternating more sharply with the dark division at vein-ends.

Underside.

Forewing. Orange field of a deeper tone than in nominate race and

* *Poecilmitis turneri* Riley, Trans. R. ent. Soc. Lond. 87 : 241-242 (1938).

the orange a little more extensive towards apex. Steely scaling of the black spotting nearer costa far more restricted and not extending downwards as far from costa as in nominate race, and the submarginal dark streak devoid of steely scaling (which is always present, in upper portion of streak, in nominate race). The dark streak not broken up into more or less separate markings between the veins, but here reduced in width, and broadened (and inwardly pointed) where crossed by the veins. Terminal area of a darker tone than in nominate race, but pierced by sharp, light incisions extending from the light spaces in the cilia.

Hindwing. More darkly marked than in the nominate race and with the contrast between the light and dark markings as clear as in specimens of *P. thysbe* (L.) in which the underside pattern is fully developed. The anal-angular projection of the hindwing is well produced.

Length of forewing: 9.75-12.5 mm. (11.5 mm., in holotype).

Female.

Forewing, as in the male, more elongated than in nominate female, but with the termen more or less rounded, as is usual in this sex.

Upperside.

Features as mentioned for the male.

Underside.

As in male, generally.

Forewing. Practically as in male and reduction of the steely scaling of the black spots at once noticeable, as is the complete absence of such scaling from the dark submarginal streak; formation of the streak as in male.

Hindwing. As darkly marked as in the male and with sharply defined silvery liturae.

Length of forewing: 10.75-14.25 mm. (13.0 mm., in allotype).

In both sexes, the legs and the underside of the palpi and of the body are, on the whole, of a less light tone than in the nominate race.

♂ Holotype, CAPE PROVINCE: Kologha Mountain (as labelled); full data: Amatola Mnts., above Kologha Forest Station, near Stutterheim, 23.i.1965 (J. C. McMaster); British Museum Reg. No. Rh. 18584.

♀ Allotype, data as holotype; British Museum Reg. No. Rh. 18585.

Paratypes in Coll. C.G.C.D., CAPE PROVINCE: as holotype, 27.xi.1966, 1 ♂, 1 ♀.

Paratypes in Coll. J. C. McM., CAPE PROVINCE: as holotype, 28.xi.1964, 4 ♂♂; 23.i.1965, 1 ♂; 28.iv.1964, 1 ♀. Mt. Kubusie, 15.ix.1963 (J. C. McM.), 1 ♂, 1 ♀; 31.xii.1965 (J. C. McM.), 1 ♂, 1 ♀. Elandsberge, 1.xii.1966 (J. C. McM.), 1 ♂; Gaikas Kop, 26.xii.1965 (J. G. McM.) 1 ♀; 29.i.1966 (J. C. McM.), 1 ♀.

The black spotting of the upperside is less well developed in some of the paratypes; also, even males of the nominate race do in some cases have the spotting of the hindwing upperside about as fully developed as in the forewing, but this feature is more prevalent in the males of *amatola*. There is less difference between most of the females of the two races in this respect. If all the characters which have been mentioned in the description are considered as a whole, *amatola* is readily separable from nominate *turneri* from Matjesfontein. As remarked upon by Mr K. M. Pennington, the hindwing underside of certain specimens from the Nieuwveld Mountains is practically as dark as that of the present race (this point having been checked from our own specimens from this

locality); but, on general grounds, these other high-altitude specimens are not referable to *amatola*. In two of the male paratypes most of the spots of the hindwing upperside, which are very fully developed, are much elongated inwardly, while some small black dots are present in the central portion of the wings in one of these specimens (with one dot in the right wing of the other example).

A few small specimens which have been taken near Steynsburg by Mrs R. J. Southey agree fairly closely with those under discussion and are quite as distinct from the nominate race. A similar pair of specimens, from Burghersdorp, in the collection of the South African Museum, was collected by Dr. D. Kannemeyer in March, 1882 (both females, and located with the help of Mr. F. W. Gess); and a female from this locality is referred to by Trimen (under *Zeritis palmus*. (Cram.)) in "South African Butterflies", Vol. II, p. 185 (1887).

P. turneri amatola has been collected, also, in the area from which the type-material was obtained, by Mr. C. D. Quickelberge of East London; and he was the first to have collected it there. Some field observations on this race are included in this paper.

This race occurs in isolated colonies on the peaks of the Amatola Mountains in the Stutterheim and Cathcart districts, from an altitude of 4700 ft. on Dohne Peak to an altitude of 6300 ft. on Gaika's Kop. It has so far only been observed on the summits of the peaks, always confined to the highest points throughout the range. It is never numerous, and is usually observed singly or in pairs. On two stations, namely, Mnt. Kubusie and Gaika's Kop, it flies together with *P. penningtoni* Riley, but is outnumbered by the latter in these two localities. However, it appears to be more widespread on this mountain range than *P. penningtoni*. It flies from September to April.

It flies rapidly when disturbed, circling for a few yards, then settling on the short mountain scrub, or on stones, with its wings open. It has not yet been observed on flowers.

The peculiar climatic conditions prevailing on the Amatola peaks (very high rainfall in the summer with frequent mist, and severe frost and snow in the winter), probably account for the differences that have developed in this race, when compared to the nominate race from the dry Karroo areas.

Some remarks relating to *P. turneri* have been published in a paper of Pennington's in J. ent. Soc. S. Afr.: Vol. XVI, No. 2, pp. 106-107 (1953). Very good notes on the Butterfly may be found in Swanepoel's "Butterflies of South Africa", pp. 139-140, Pl. VI, figs. 18, 19 (1953).

The authors are very much indebted to Mr G. E. Tite for his kindness in reading the present manuscript before its publication, and both to himself and the authorities of the British Museum for most obligingly arranging for the types of *P. turneri amatola* to be photographed for the accompanying plate.

"Blencathra", Cambridge Avenue, St. Michael's Estate, Cape Town.
34, Jubilee Road, Stutterheim, Eastern Cape Province.

Ecology versus Taxonomy

By Professor Frank Balfour Browne

Ecology, nearer its meaning as Oecology, a name created about one hundred years ago, was natural history, regarded by trained biologists as an amusement of amateurs. E. Ray Lankester, 1888, under the name bionomics, defined it as a branch of Zoology "the lore of the farmer, gardener, sportsman, fancier and field naturalist". But with time, ecology has evolved. Elton, 1933, wrote: "When the species are properly indentified by an agreed system of names, specimens stored in museums for reference, the habitats of the animals accurately described, the information tested by various different workers, ingenious experiments devised to find out causes, then we can say that natural history has begun to be animal ecology". In 1964, E. B. Ford, in an excellent book entitled "Ecological Genetics" used it as the hand-maiden of genetics and many worthy biologists have gradually worked it into the position of a science. The natural history part of this now extensive subject dealt with the relation of animals and plants with their surroundings and there are an increasing number of papers being published in which various examples of this subject are described and in many cases the actual factor producing changes in the living things have been identified. A few of the subjects dealt with will provide a preliminary exposition of my object in writing this paper. In 1896 Standfuss had shown that climatic conditions made a considerable difference to certain butterflies. He found that the pupae of some *Papilio* and *Vanessa* species from Syria and southern Italy, if subjected to cold conditions produced imagines which resembled Lapland races and the northern European forms resembled normal southern races if the pupae were kept in warm conditions.

Sellier, 1849, found that a certain stage in the life of the nymph of the Cricket, *Gryllus campestris*, passed under cold conditions, affected the development of the wings and Miss Jackson, 1928, in connection with her work on wing development in the weevil, *Sitona hispidula* stated that there was a prevalence of forms without normal flight muscles amongst macropterous weevils emerging late in the autumn, and cautiously remarked "this may have been due to the delayed development". The late Professor Heslop Harrison came to the conclusion that melanism in moths in the smoke-laden areas of Yorkshire was induced by the ingestion of manganese salts by the larvae, e.g. *Selenia bilinearia* and *Tephrosia bistortata*, a view not generally accepted at that time.

The amount of work done in recent years on the effects of environment upon living things is surely convincing enough to encourage further research on the subject. Whether or not such influences can, as it were, wear down the genes so that, in time, they will take over the changed characters and thus prove the inheritance of acquired characters is a matter for further research and does not arise here.

I don't know the early history of the butterflies mentioned by Standfuss but there must be a number of cases in which what the taxonomists had regarded as distinct species have turned out to be habitat forms of one species.

In a recent paper LeQuesne, 1965, summarised his work as follows:— "It is becoming increasingly evident from recent studies, especially those in the field of speciation, that we cannot decide the correct taxonomic status of certain populations without experimental studies. In some cases

a detailed examination of specimens caught under natural conditions, may reveal or at any rate suggest the actual state of affairs, but frequently laboratory studies of the effects of changes in the conditions, or in ecology, the isolating methods involved, the genetic variation of the cytology, may be necessary to decide their status conclusively".

In 1958 when the third volume of British Water Beetles was published, I dealt with the genus *Helophorus*, which includes a number of genuine and a number of doubtful species, by placing the doubtful ones in 'species-groups or complexes' and one of these groups was under a species *flavipes* created by Fabricius in 1792. I included about 15 so-called species in that group and, until now, there seems to have been little work on the genus. In 1966 D. K. Kevan published a paper in which he took out some of these so-called species and restored them to species rank.

Although I do not agree with his conclusions I must thank him for having aroused my interest because of his grounds for arriving at them. He claims that it is "quite useless to base one's study on external characters, these being so variable and apparently subject to the influence of ecological conditions". He states that "the aedeagal approach to the problem appears to be the only obvious alternative". To support this view he assumes that "the coleopterous aedeagus . . . can, in general, be considered specifically constant, its form is not normally strongly affected by environment and even if it exhibits a little variation in detail, its essential characters remain distinct". So also do the essential characters of the variable characters he regards as valueless! It does not seem to have occurred to him that, in this particular section of this genus, the difficulty of separating the various forms is just because they are so variable and that the aedeagus is an external character and comes under his statement that external characters are quite useless for his purpose. Why should this structure be resistant to external influences if other external structures are not?

The aedeagus is known to vary within species. I remember the late J. G. Arrow showing me, in the Museum, some variations in the aedeagus of a species of Lamellicorn beetle and I seem to remember a paper on the subject. Quite recently C. E. Tottenham of Cambridge has given me some facts about a Staphylinid beetle of the genus *Philonthus* in which the aedeagus varies. The work of Müller, 1954, Wagner, 1959, LeQuesne, 1965, on the Cicadellid bugs gives the results of breeding experiments in which the aedeagus varied from the typical shape, depending upon the relative length of day and night and on changes of temperature during succeeding generations. There is therefore evidence of variations in the aedeagus within the species, but before leaving this subject I must once more refer to Kevan's view. Remembering the case of the Dytiscid beetle, *Deronectes depressus-elegans* in which extreme forms were as distinct as any taxonomist could wish but in which there are all intermediates between the two extremes which breed, according to Falkenstrom, 1933, and in which there are intermediate grades of the aedeagus, Kevan disposes of it as a case of "unexplained exception" to his rule that the aedeagus must be specifically constant. (E.M.M., 1966, **101**: 255.)

Having discussed various matters connected with ecology. I will now concentrate upon a very small part of the subject and for this purpose I am taking a form of the *flavipes-complex* known as *mulsanti*, as it is a well-kown inhabitant of brackish water round our coasts. If the view I am suggesting as to its origin is ultimately shown to be correct, then at

least some of the other forms in my species-group will also be accounted for as divergences from the direct heredity line caused by external influences.

First to establish *mulsanti*, a name produced by E. C. Rye 1866, in a popular book on British beetles, but without a description. Rye produced a list of species in which he placed *mulsanti* as a replacement of *dorsalis* of Mulsant, 1844, apparently on the assumption that Mulsant's species was different from *dorsalis* Marsham, 1802. Marsham's description of his species is short and will cover a number of forms, but whereas he described its habitat as "in aquis", Mulsant did mention brackish water. Unfortunately Mulsant includes a reference to Marsham which seems to indicate that he was describing the same species or complex.

Except for taxonomic archaeologists, I doubt if endeavours to produce the true history of descriptions given by various authors will lead anywhere and I propose to deal with the form as it is known to-day, without any further historical excursions. The basic fact upon which I rely is that, so far as the Britannic area is concerned, *mulsanti* is a brackish water form and therefore I assume that the inland records mentioned by Fowler refer to exploratory individuals or to misidentifications.

I think it is possible that few coleopterists have seen the extreme form of *mulsanti* and, except in what were my own collection, now in Edinburgh, the few specimens I have seen of *mulsanti* have all been of the more common pattern. Sharp undoubtedly had the extreme form and it seems probable that Fowler, 1887, had seen Sharp's specimens, as his statement "thorax bronze green or coppery, irridescent . . . with the sides often paler", emphasises the colouring which is thus emphasised in the extreme form.

I have recently seen the Sharp collection in London and I was astonished to see the condition of the many specimens of *mulsanti*. They all had become dark in colour and had apparently shrunk, as the thorax had become more arched and the sides more rounded.

A specimen I picked out as towards the extreme form was traced in Sharp's diary as having been taken on the shore of the Kirkconnell Moss, near the mouth of the river Nith, on 19th May 1868.

A few days before reaching London I had been in Edinburgh where I examined about 150 specimens of *mulsanti* which I had collected, some of them more than 50 years ago. All the collection is in shallow boxes, each of which will hold about 40 *mulsanti* and the specimens seem to be in very much the same condition as when they were taken. Among them are a few odd specimens of what I have called the extreme form and there were also, in a few places two or more of this extreme form together which, in at least one such case, had all 5 been taken at the same spot and on the same day.

Although in those days I was not specially interested in the species of *Helophorus*, I accepted the species as named and collected interesting specimens and, from the collection, it seems obvious that the extreme form of *mulsanti* was not common, whereas less extreme patterns were what was usually turning up. I will now give a description of the most essential part of the extreme form, enough to identify it when anyone happens to take it. Except that it is fairly large, about 5 mm. long, I do not remember finding a small one, and the general colouring rather pale, the characters of the thorax are sufficient, as other characters are common to all *mulsanti* and other forms and have already been described by many

authors. The thorax, which is flattish, is orange-red with metallic reflections and gives the impression of being more or less square. The front margin is almost straight across but slightly excised behind the eyes. The posterior margin is slightly less long than the front and is of two more or less straight halves which run together in a blunt point slightly behind the outer ends. The sides expand outwards for about one third of their length and then turn inwards and run back in more or less straight lines to join the hind margin. I have mentioned the flattish surface; the interstices between the longitudinal grooves appear to be flattened so that they dip steeply into the grooves and the numerous punctures appear to be smaller than in the common form in which the interstices seem to bulge a little and to be more rounded into the grooves. These are important characters and others, such as the shapes of the thoracic grooves, whether smooth or angled, and the rise of the alternate interstices of the elytra and such trifling differences which are variable, not only in *mulsanti*, have been often described. To all these points may be added the pattern of the aedeagus which groups together the forms of *mulsanti*.

Now, concerning the salt marsh environment. It has possibly occurred to those who have so far read this paper that I have concentrated on this form of the *flavipes-complex* because brackish water is a definite type of habitat. But is it? Our salt marshes round the coasts doubtless vary as salt marshes but, in any one salt marsh there are the pools nearer the shore which more frequently receive the tides than the pools farther inland. The tides vary from day to day, from spring to neap, so that the salinity of the pools varies. There are rainy periods and thunderstorms which affect the salinity and droughts which, when they don't dry up some of the pools, cause increases in the variation of the temperature. Possibly also the amount of light may have its effects upon the populations in the pools. Remembering Sellier's discoveries as to the effects of temperature in a certain stage in the nymphal life, is it not possible that such variable forms as occur in these brackish pools may be affected by environment?

In a long note, recently published (E.M.M., 1966, **102**: 269, 70) Angus expands upon the habitats of some of the members of the *flavipes-group*. He writes: "In the *H. flavipes-group* the species habitat distinctions are rather clearer. *H. mulsanti* has long been known to be an inhabitant of salt marshes where it replaces *flavipes* and *walkeri*, though often with overlap in the landward edge of the saltings . . . *flavipes* is usually confined to acid water and *walkeri* to neutral or basic water". This is a view based upon the belief that each form is a direct result of internally-stimulated genes, in which case every form is a true species, But it is possible that a species-group may be an assembly of forms originating from a species, the direct product of the genes, which have been swerved out of the heredity line by environmental conditions. And work on these lines is already been carried out by Angus at Oxford. He has already tried in one case to distinguish habitats on ph values. It seems possible that acid and basic habitats can be resolved into factors, as in the case of salt marshes, but a salt marsh insect seems to provide immediate material for experiment in order to discover whether in this variable form the insect chooses its habitat or whether the habitat makes the insect.

There is a further complication which may arise and this is the probability that the various forms will hybridize and this is more prob-

able if these forms are all by-products of one species than if they are all good species under the direct control of the genes.

6.vii.1967.

REFERENCES

Angus, R. B., 1967. A preliminary note on the Habitats of some species of *Helophorus*. Ent. Mon. Mag. **102** : 269.
Balfour-Browne, F., 1940, 1958. British Water Beetles. Ray Soc. Vols. 1 and 3.
———, 1919. On *Deronectes depressus* Fab. and *elegans* Panz. Ann. & Mag. Nat. Fist. ser. 9. **3** : 293-308.
———, 1966. On a species-group of *Helophorus* Illiger. Ent. mon. Mag., **102** : 265-269.
Elton, C., 1927. Animal Ecology.
Falkenstrom, G., 1933. Die Metamorphose von *Deronectes depressus* sensu Fab. und *latescens* nebst Zugen aus ihrer Oekologie. Internat. Rev. Hydrobiol. u Hydrograph. **29** : 161-220.
Ford, E. B., 1964. Ecological Genetics.
Fowler, W. W., 1887. British Beetles **1**.
Heslop Harrison, J. W., 1927. Experiments on the egg-laying instincts of the Sawfly *Potania salicis* Christ. and their bearing on the inheritance of acquired characters. Proc. Roy. Soc. **101** : 115-126.
Jackson, Miss D. J., 1928. The inheritance of long and short wings in the weevil, *Sitona hispidula*, with a discussion of wing reduction among beetles. Trans Roy. Soc. Edinburgh, **55** : 665-735.
Kevan, D. H., 1966. The British species of the genus *Helophorus* Illiger subg. *Helophorus* s. str. Ent. Mon. Mag. **101** : 254-268.
Lankester, E. Ray, 1888. Zoology. Encycl. Brit. 9th ed., p. 803.
Le Quesne, W. J., 1965. Some additions to the British Deltocephalinae (Hemiptera Cicadellidae) with notes of synonymy. Ent. mon. Mag., **95** : 251-287.
Marsham, T., 1802. Entomologia Britannica, **1** : 410.
Müller, H. J., 1957. Die Saisondimorphismus bei Zikaden der Gattung *Euscelis* Brull Beitrag. Ent. **4** : 1-56.
Mulsant, M. E., 1844. Hist. Nat. des Coléoptrères de France. Palpicornia, p. 40.
Rye, E. C., 1866. British Beetles.
Sellier, R., 1849. La macropterisme expérimental chez le grillon (*Gryllus campestris*). Extrait Actes 68 Congr. Ass. Fr. Avanc. Sci. 1-2.
Sharp, D., 1915. Studies in Helophorini. Ent. Mon. Mag. **51**.
Standfuss, B. M., 1896. Handbuch der palearctishen Grosschmettelings. Jena.
Wagner, W., 1939. Die Zikaden des Mainzer Beckens. Jahrb. Nassau Wiesbaden. **86** : 77-212.

Nothris verbascella Hubn. (Lep. Tinaeina) Rediscovered

By J. M. Chalmers-Hunt

Some years ago it occurred to me that this fine Gelechiid might still persist in East Anglia, although so far as was known there appeared to be no record of its having been seen in Britain this century. Accordingly, a search for its foodplant, the very local Hoary Mullein (*Verbascum pulverulentum* Vill.) was undertaken in the Bury St. Edmunds district of Suffolk, but this unfortunately proved a failure. On the afternoon of May 30, 1967, however, I had occasion to visit a locality in Norfolk, kindly indicated to me by Mr. E. G. Swann. There, in a very restricted area in the King's Lynn neighbourhood *V. pulverulentum* was plentiful, and on almost the first plant to be seen, I experienced the gratification of finding a full-grown larva of the "lost" species. I had invited Col. A. M. Emmet and Messrs. S. Wakely and H. E. Chipperfield to accompany me, and together we observed more larvae and at least as many pupae, also, a single imago which H. E. C. took at rest on the foodplant.

It was noticed that, with one exception, all the larvae and pupae found were situated on the undersides of the leaves of the foodplant, and beneath a covering consisting of silk and the mealy white wool of the Mullein, and furthermore, that the larvae were full-grown or mostly so. Twice, I noticed two pupae together under the same covering, and a pupa which A. M. E. found was seen to be sited under a web spun on the *upper* surface of the leaf, but these were clearly exceptional. It is interesting to record that from the larvae and pupae collected, there appeared to be no evidence of parasitism, and with very little if any mortality, each of us reared about ten moths. My first example emerged on June 5, and the last on June 23.

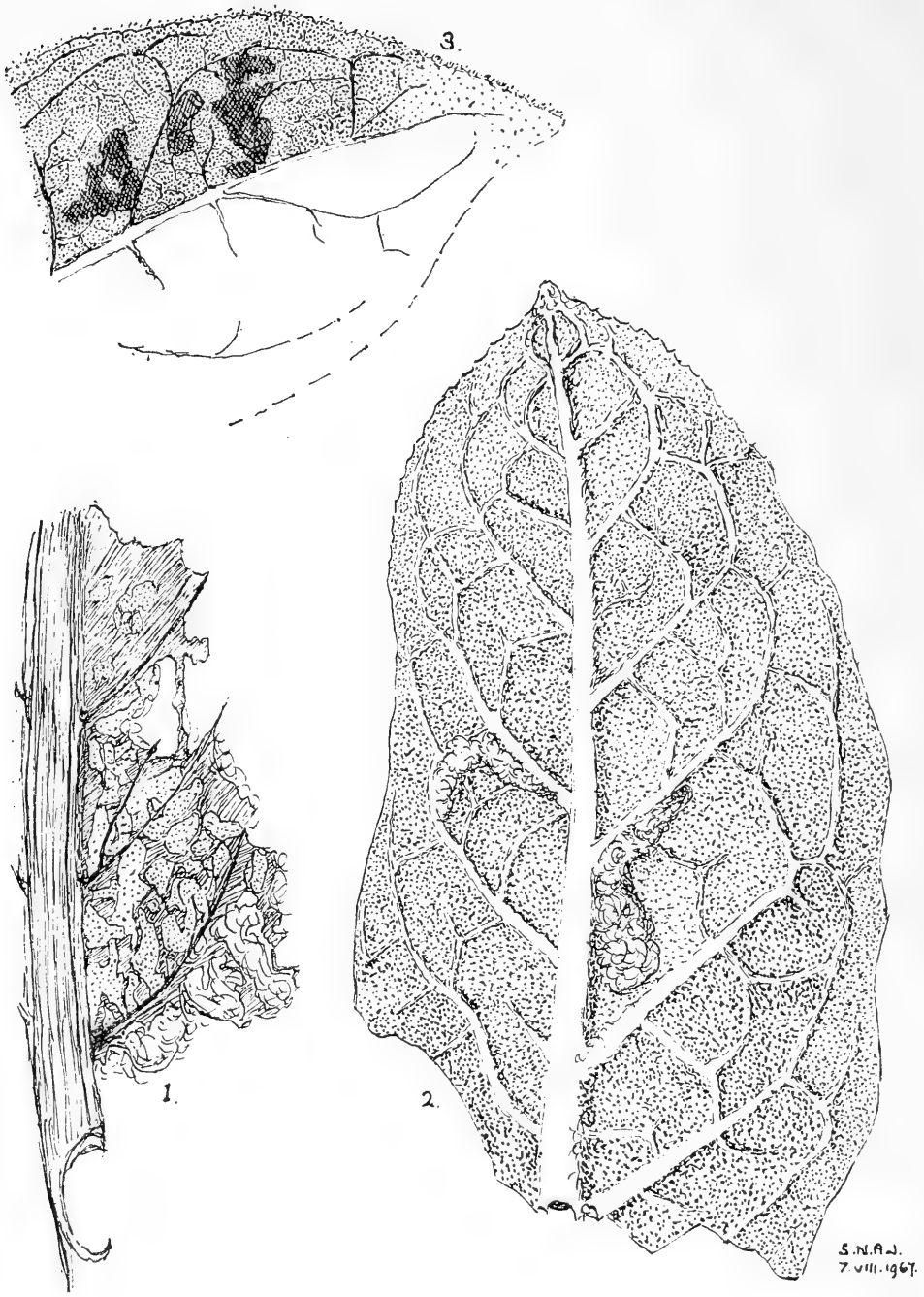
On July 30, with A. M. E., I again visited the spot. On this occasion a number of larvae was noted on the very young leaves at the hearts of the plants, and in one fair-sized leaf, quite small larvae were observed living in galleries. Many of these plants had already flowered, and a few were still in bloom, but there appeared to be no sign at this locality of the larva feeding on the flowers or seeds, a habit of the species which Mr. S. N. A. Jacobs informs me he noticed in Switzerland, and whence he reared his series of the insect. The figures on the accompanying plate are drawn by Mr. Jacobs from material collected on 30th July, and show well the habit of the larva. From two other larvae taken on this date, I bred two moths of evidently a second generation. These appeared on 15th and 30th August, and are appreciably smaller than those of the June emergence.

I know of no illustration of the imago of *N. verbascella* in any work on the British lepidoptera. Meyrick (1927), however, describes it as "16-21 mm. Forewings light ochreous, more or less black-sprinkled; a black dot on base of costa; stigmata black, first discal often absent, plical small; terminal blackish dots. Hindwings grey." "Larva brown; head and plate of 2 black." Stainton (1854) gives highly detailed figures (plt. 4, figs. 12a, 12b, 12c) of the neuration and head of the insect, apparently from drawings by W. Wing, the first to discover the species in Britain. Both Spuler (1908-10) and Eckstein (1922) illustrate the moth, but the colours in each case are too dark.

N. verbascella was first noticed in this country by Wing (1853), who exhibited it at a meeting of the Entomological Society of London on September 23, 1853, as "Ypsolophus Verbascellus, a new British species, bred from leaves of Verbascum floccosum, near Norwich". The circumstances of its discovery are outlined by Stainton (1854) thus: "*Verbascella* was bred only last summer by Mr. Wing, from larvae accidentally brought into his garden on some plants of *Verbascum pulverulentum*, from the neighbourhood of Norwich".

Tillett (1858) writing from Norwich on June 14 1858, says: "I have found about a score of larvae and pupae of this insect, and believe I can find more. I think Mr. Wing was not quite correct in stating that the larva turns to pupa in a turned down corner of a leaf", generally it forms a silken cocoon between two of the ribs on the back of the leaf". Two months later, the same observer (1858a) communicating on behalf of himself, J. Reeve and C. Clowes, writes: "We have at last taken the larvae of this insect in abundance. More than a hundred are now in our possession".

Barrett (1869) furnishes a wealth of detailed facts, especially in regard to the habits of the larva, which are so interesting as to warrant repro-



Nothris verbascella Hübn.

Fig. 1. Gregarious feeding place of young larvae.
Fig. 2. Feeding places of growing larvae seen from below.
Fig. 3. Feeding places of growing larvae seen from above.

ducing here. He says that on October 20 1869 at the locality indicated by J. Reeve, he found in the undeveloped leaves at the heart of the plants very young larvae already at work which continued to feed slowly all through the winter, and rapidly increased in size in the spring. He adds that at this time and through the spring, "fresh ones appeared to be hatched, for at the end of April, when many larvae were well grown and a few had entered the pupa state, there were still many minute ones, and this continued to be the case till the middle of June; and even as late as July 3rd . . . half-grown larvae were still to be found feeding in the younger leaves and even boring into the leaf stalks and stems. At the same time pupae were to be found in a slight web on the underside of the larger lower leaves, generally in the angle of two ribs, or in a turned-down edge of a leaf". He says that in the wild, he first noticed the moth flying in the evening of June 25th and the last on August 25th, but adds that in the perfect state they are seldom seen. In a later communication, Barrett (1870) notes that there is evidently a partial second brood, as on September 8th 1870, he noticed a large plant of *V. pulverulentum* of which the heart was completely destroyed and on examination found well-grown larvae and a number of pupae, from which imagines emerged throughout that month. He points out that the second brood moths were not nearly so large as the first.

Several *verbascella* in my collection, labelled as bred in 1886 from Norwich larvae supplied by Wheeler [F. D. Wheeler of Norwich], show that the species continued to be taken in Norfolk. On the other hand, it seems it was not until about 1895 that it was first noticed in the adjoining county of Suffolk. Morley *et al.* (1937) state that Frank Norgate found the species about 1899, "abundant in my garden at Bury St Edmunds"; in the BMNH series, are two of Norgate's specimens dated 1896 and 1897; and in my own collection is a specimen labelled "Suffolk 1899". .

I consider it possible the species may yet persist at Norwich, though questionable whether it still does so at Bury St, Edmunds where the plant may have been destroyed. What is certain, however, is that the King's Lynn locality is now the only one where *verbascella* is known to survive in this country, and although very restricted in extent, the area seems reasonably safe from destruction, and the colony of the moth quite strong. Col. Emmet, Messrs. Wakely and Chipperfield have therefore agreed not to disclose the locality.

In conclusion, I do thank Mr. E. L. Swann for much help regarding the distribution of *V. pulverulentum*.

REFERNCES

Barrett, C. G. (1869). Notes on the earlier stages of Nothris verbascella. *Ent. mon. Mag.*, **6** : 163-164.
Barrett, C. G. (1870). Notes on Nothris verbascella. *Ent. mon. Mag.*, **7** : 160.
Eckstein, K. (1922). *Die Schmetterlinge.*
Meyrick, E. (1927). *Revised Handbook of British Lepidoptera.*
Morley, C. *et al.* (1937). *The Lepidoptera of Suffolk.*
Spuler, A. (1908-10). *Die Schmetterlinge Europas.*
Stainton, H .T. (1854). *Insecta Britannica. Lepidoptera : Tineina.*
Tillett, W. H. (1858). Nothris verbascella. *Ent. week. Int.*, **4** : 94.
Tillett, W. H. (1858a). Nothris verbascella. *Ent. week. Int.*, **4** : 165.
Wing, W. (1853). Ypsolophus verbascellus, a new British species. *Proc. ent. Soc. Lond.*, **1853** : 127.

A Review of the status of certain Scarabaeoidea (Col.) in the British Fauna; with the addition to our List of *Onthophagus similis* Scriba

By A. A. Allen, B.Sc., A.R.C.S.

(continued from page 206)

Stephens had previously (1830: 175) published this capture, but in rather less detail; later, however (1839: 155) he gave *two* New Forest localities (cf. Fowler, *l.c.*). The addition of Lyndhurst and the period of occurrence noted (August to October) point decidedly to one or more further captures in the forest during the intervening time. I have in my collection a fine male 'rescued' from a small box of beetles that came into my possession many years ago—none bearing any data—the collector of which (then deceased) had resided in the New Forest district; all the rest were quite ordinary British species, including several typical of that area. Nothing, therefore, is deducible concerning this specimen of *taurus*, but the circumstances are suggestive.

It is, I think, very little known that there is an Oxford record of this species. It consists of a brief note in the 'Journal' of the Entomological Society's Transactions for 1841: "Mr. Holme stated that he had captured *Onthophagus Taurus* in copulâ in the garden of Corpus Christi College, Oxford". This is certainly very curious, if genuine. Nothing appears to be now known of the captor or his reliability. Possibly at that early date the insect was breeding somewhere in the vicinity,[8] and had strayed in search of 'fresh woods and pastures new'; but the occurrence of a *pair* in such conditions is rather hard to believe.

The sole record for this century known to me is unfortunately still more suspect, but for a different reason. It is reported in the Proceedings of the same Society for 1913, and is one of eight or nine species said to have been taken in the Hindhead district of S.W. Surrey in 1909-10, by a Mr. A. J. Richards, and exhibited at one of their meetings at which he was a visitor. Practically all the species in question are such great rarities in England that their occurrence in any one area within such a short time is in the highest degree improbable, and seems (understandably!) to have imposed too great a strain upon the credulity of coleopterists; at all events, the records have been generally ignored. It would be imprudent to do otherwise than reject them here—but, being published, they should be mentioned.[9] (Mr. Johnson is of the same opinion.)

Little can be said by way of evaluating the records of this *Onthophagus*. It may have been resident for a time in the New Forest and the Exmouth district, and just possibly near Oxford; but whether the specimens were immigrants or their progeny, members of established colonies through introduction, or the remnants of indigeous stock, can only be conjectured. The expression 'rare' concerning the Devonshire captures rather suggests

[8]Christ Church meadows adjoin these gardens and cattle graze there even now.

[9]They include two other Scarabaeids dealt with in the present paper (*Oxythyrea funesta* and *Trichius zonatus*), which, in order to avoid repetition of lengthy explanations, will not again be referred to under the respective species.

several specimens over a period of years. It may be noted that the south coast of that county is a natural landing place for insects migrating, or carried by air currents, northward from Jersey; one thinks in this connection of the Jersey Tiger moth, *Euplagia quadripunctaria* Poda, which may have originally obtained a footing in this way in South Devon, its British headquarters.

Onthophagus fracticornis Preyss. and *O. similis* Scriba.—These closely allied species have only in quite recent years been positively separated on the Continent, having been earlier regarded as one under the former name, with the latter classed most often as either a small variety or a synonym. A year or two ago, seeing the marked differences in the aedeagi of the two species as figured by Hansen (1958: 164), I dissected males of the British *fracticornis* (so-called) in my collection, which thus proved to be quite definitely *O. similis*. This was the case with all British material of the supposed *fracticornis* later examined by Mr. D. K. Kevan, Mr. Colin Johnson, and myself, with the sole exception of five specimens found by Mr. Kevan in the Royal Scottish Museum collection, Edinburgh, and two by Mr Johnson in the Manchester Museum, which are undoubtedly the true *O. fracticornis*. Oddly enough all seven are females, but Mr. Kevan in informing me of his discovery was able to point out a good character for distinguishing the two species in either sex without dissection. For this and the other diagnostic characters, see Landin (1959) and Johnson (in press).

What is really unfortunate from the present point of view is that these seven specimens of *fracticornis*—the Edinburgh ones *ex coll.* J. Chappell, the Manchester ones *ex coll.* J. Sidebotham—are without any data; it seems very probable that all are from the same source and were taken by the former collector. Yet there is little reason to doubt their British origin, for Chappell cannot well have regarded them as anything but *O. fracticornis* and so would hardly have put foreign examples of such an ordinary species, unlabelled, into his cabinet; had they been given to him, moreover, they would most likely bear the collector's or donor's name. Mr. Johnson has suggested, with reason, that though most of Chappell's collecting was done in the Manchester district, this has by now been so well worked (and even *O. similis* found only rarely) that Chappell's *O. fracticornis* are more likely to have come from further west —North or West Wales, or conceivably Ireland. The latter possibility receives support from the fact that Landin (1959: 219) mentions having seen this species as well as *O. similis* from Ireland. However, Dr. Landin writes (*in litt.*) that as the specimens in question are not now available for examination—they were taken by the late Herr Einar Klefbeck—he considers that his Irish record of *fracticornis* cannot be quite definitely accepted without confirmation (though there is no doubt about *similis*). This again is most unfortunate; but it must be added that Dr. Landin, from his familiarity with both species, seems to us far more likely to have been right than not, and the occurrence of *fracticornis* in Ireland remains a high probability. The two species are about equally widespread on the Continent and no difference in habits or habitat has been detected.

The position, then, is that the familiar species known in this country up to now as *O. fracticornis* has been misidentified and is in fact *O. similis* (Scriba 1790), which name must be added to the list; while the species which is really an (overlooked) addition to our fauna is the true *O. fracticornis* (Preyssler), whose name should be retained in the list on the

strength of the indications. It seems reasonable to expect that the existence of this species in the British Isles will yet be corroborated; it should be sought more particularly in Ireland and Wales, both in the field and in collections already made from those areas, and any extra large specimens passing as 'fracticornis' be critically scrutinized.

Mr. Colin Johnson, who has made a careful study of the distinctions of these species from good series of each, will be dealing fully with this aspect of the subject in a forthcoming paper.

Saprosites mendax Blkbn.—This species differs from all others dealt with in the present paper, apart from the two preceding, in that its right to a place on our list is not in question; it can therefore be dismissed very shortly. The sole reason for including it here is to point out that since it must be an introduction from South Australia which has established itself, without even a suspicion of native British origin—the genus being wholly extra-European—it is in a different position, faunistically, from its allies in Britain and ought to be indicated in the new edition of the Check List as a naturalized alien. Discovered here by the Rev. C. E. Tottenham at Arundel Park, West Sussex, in the burrows of *Dorcus* and *Sinodendron* in old rotten beech trunks (Tottenham, 1921, 1930), it has continued to be met with from time to time in that locality—but apparently in no other—up to about 8 or 10 years ago, and probably still occurs there. The mode of the beetle's arrival in the area remains problematic. It has already been mentioned that the omission of *S. mendax* by Britton (1956) was accidental.

(*Aphodius* ?n. spp. (*sic*) near *niger* Panz. and *plagiatus* L. (Sharp, 1909).—In his paper reinstating *A. niger* Panz. in our list, Dr. D. Sharp drew attention to single examples of *Aphodius* from the New Forest and Deal which he believed must represent new species, coming very close to *niger* and *plagiatus* respectively. Whether the differences as described justify this view was, perhaps, open to doubt, at least in the absence of further specimens exhibiting them; and nothing further has been published, to my knowledge, on these alleged species up to the present. It is desirable, therefore, that the matter should be cleared up. The specimens are to be found in Sharp's collection at the British Museum (Nat. Hist.), placed slightly apart from the series of the species with which they are associated.

On a recent visit to the Museum, Mr. Johnson (at my suggestion) critically examined these two insects and gave it as his decided opinion that they were at most variants of the two above-named species; in fact, he tells me that he failed to discover any significant differences at all, at least in the characters regarded as of specific importance in this group of *Aphodius*. I have no hesitation in accepting his view as finally settling the question, and despite Sharp's belief to the contrary, in referring these disputed examples respectively to *niger* and *plagiatus*. Sharp's collection of British beetles contains a number of alleged new species, most of which cannot be upheld, and it is perhaps a measure of his doubt concerning them that they were never published.)

Aphodius varians Duft. (=*bimaculatus* F., Steph., *nec* Laxmann).—Stephens (1830: 197) writes of this species: 'Rare: the only indigenous specimens which I have seen are in the collection of the British Museum; they were taken near Windsor many years ago'. In 1839 (p. 162) he adds Ripley (Surrey) and gives the months of capture as May and June. There are two specimens, in very good preservation, in the drawer of

doubtfully British Coleoptera at the end of the Power collection, labelled 'B.M. Coll.', so it seems reasonable to suppose that these are the Windsor examples referred to by Stephens, or the remnant of them; and they provide some confirmation of his record. Walker (1932: 72) mentions one specimen, 'aged but in fairly good condition', in the Dale collection (at Oxford).

Even so, I should have been content to leave this species in its former state of oblivion as regards the British list, had not Mr. Colin Johnson informed me (*in litt.*) that there is a specimen of *A. varians*, also in good condition, standing over the label *quadrimaculatus* L. in the Blatch collection in Manchester Museum.[10]. It bears the data 'Swansea, 1899' without indication of captor or other details. Mr. Johnson believes it to be authentic, which I see no reason to doubt. This far more recent capture, considered in conjunction with the early records—while proving nothing, for it could have been a mere straggler or introduction *via* the docks—nevertheless strengthens the claim of this *Aphodius* to be regarded as British, even if still rather doubtfully. At least there would seem to be a distinctly better case for it than for such a species at *Trox hispidus*, and quite as good a one as for *Rhyssemus germanus*—both included in the 1945 Check List and the 1956 Handbook. I suggest that it should be admitted to our list, but it may be best for the present to query it as being in need of confirmation.

A. varians comes in the group with *plagiatus* L. and *niger* Panz. (sg. *Nialus* Muls.); it is a little larger than the last-named, the elytra with strongly impressed striae, the sutural stria much deepened on the apical declivity, and the pronotal sides with an impunctate space. The known British examples belong to the var. *fabricii* d'Orbigny, which appears to be the most usual form of the species; it has a large bright red patch at the shoulder of each elytron, narrowing more or less to a point about the middle of the disc. The nominotypical *varians* (=*niger* Stm. *nec* Panz.) is entirely black. It is one of the more eurytopic species of the genus.

(*Aphodius satellitius* Hbst. (=*pecari* F.).—The sole authority for this as a British beetle is Stephens, whose first record (1830: 204) is: 'The only indigenous examples I have seen of this conspicuous species are in the collection of the British Museum; they were captured, I believe, in the neighbourhood of Windsor'. Again, in the 'Manual' (1839: 163) he repeats Windsor and adds Ripley (Surrey), giving May to July for the time of appearance. Still following closely the pattern of the last species, here also specimens—in this case three—survive in excellent condition in the same collection, and bear similar labels; they have an equal chance of being (some of) the original ones mentioned by Stephens.

The fact that both this and the preceding species were reported from the same two localities, Windsor and Ripley, is surely very curious, and reminds one of a parallel coincidence in respect of *A. scrofa* and *Pleurophorus caesus*. In the present case, however, there appears to be no shred of evidence, outside Stephen's testimony of long ago and the specimens which tend to support it, that the species has been found here. Add to this the improbability of *A. satellitius* being a native of Britain —it has a less wide and more southerly range than *A. varians*—and it

[10]So experienced a coleopterist as Blatch can hardly have mistaken this insect for *A. quadrimaculatus*, and indeed it was placed well apart from a genuine example of the last-named from Redhill.

will be seen that it can hardly, at this stage, be given a place in our list without something more in its favour. At the same time the possibility that it may formerly have inhabited this country when, perhaps, the climate was better suited to it, remains open. The species cannot be mistaken for any other by reason of the large transverse blackish post-median patch across the dorsum, widening out from a black sutural stripe, the rest of the elytra and the legs being red; it is somewhat allied to *A. depressus* Kug. and is of about the same size and shape.)

Aphodius sturmi Harold.—A single specimen of an *Aphodius* recorded by Bouskell (1903) as captured by J. H. Keys near Plymouth, presumably not many years since, was determined by the former as above and subsequently verified by Reitter. Although Bouskell published it as 'a British insect' and 'an interesting addition to the British list', it did not 'catch on' and the record seems to have been either overlooked, or else considered insufficient to establish *sturmi* as belonging to our fauna. On account of the ease with which dung-beetles can be casually transported from one country to another in cattle-boats, etc., I had originally adopted the latter view; but Mr. Johnson thinks that the record, being definite and not too ancient, justifies the inclusion of *A. sturmi* in our list. I therefore propose this course here. However, in face of the above caveat—more than ever applicable to single specimens—it would seem prudent to treat it for the time being, like *A. varians*, as requiring confirmation.

Though actually another member of the *plagiatus* group, it is said to be much like a very small *A. ictericus* Laich. (=*nitidulus* F.), but with the basal post-tarsal segment as long as the next three instead of the next two.

(*Aphodius obscurus* F.—There is an example of this insect in the Power collection, labelled 'Britain/A. J. East/1908.86'. It is regrettable that the locality was not more narrowly specified and the situation of capture indicated, which would have notably enhanced the value of the record. I have seen no published reference to the occurrence of the species here. In any case it does not deserve admission to our list without corroboration, by reason of both the vagueness of the data and the unlikelihood of its being a British species. *A. obscurus* is a robust, broadly-built, middle-sized, very dull black *Aphodius* in the same section as *porcus* F., but larger, with the elytra widened behind and their striae and puncturation very fine; it cannot therefore be confused with any of its congeners in Britain.)

Aphodius scrofa F.—An exceedingly rare species with us, for which more evidence is desirable to place it beyond all question as truly British. There appear to be only two published records; so I am glad to be able to add a third—of which I have seen no previous notice—for, in cases where there are so extremely few, even one may suffice to tip the balance in a species' favour.

(to be continued.)

THE LARGE TORTOISESHELL BUTTERFLY.—In the footnote on page 156 of the June 1966 *Record* I ought to have mentioned that *Vanessa cardui* L., although a hibernator, does not over-winter in Great Britain. In the West of France, however, it hibernates in small numbers (Gélin & Lucas, *op. cit.*, on p. 158). The seventh insect to which Ford referred was presumably *Gonepteryx rhamni* L.—P. B. M. ALLAN.

How I came to start collecting

By I. R. P. Heslop

My first (and for a long time only) nature book was "The Little Naturalist at the Seaside" presented to me (I have it yet) at Christmas 1909 by a much loved aunt in Wiltshire (she died four years ago at the age of 95), which radically influenced my outlook on the world about me. Also there was a picture inter alia of a moth—without its name—on the inside of the cover which in the following year, even at the age of only just six, I was able to recognise as frequenting the profuse euonymus hedges in the vicinity.

The very earliest recollection I have of any physical connection with the Lepidoptera, however, is when at the age of just seven in the year 1911 I lay, really ill (from mumps), for seven weeks in bed at my home in Bristol. To interest me, someone (it may have been my grandfather) brought me a number of caterpillars of the Small Garden White (as I later knew) feeding on Nasturtium from the garden. I watched them pupate. And later, when they emerged, they flew about the room settling upon the flowers and occasionally pausing at my pillow; until, delighted as I was by their presence, I asked my nanny to let them go out of the window. Somebody else had added to these a butterfly which he had found at rest in the evening beside a path through a clover field at Redland Green. It was quite unharmed, and I have the clearest possible recollection of it: it was undoubtedly a Pale Clouded Yellow.

Later, when I was better, I desired to see this same clover field; and I was duly walked to it, only to find that it had just been cut for a second crop. However, I was allowed to play in the hay while the ladies retired to the trees to shade themselves from the heat of that incredible August. Since no one had thought of equipping me with a hat, I soon found myself back in bed again with a headache the like of which I have never known since.

In the following year, 1912, the family holiday was at Cromer. Here on one rainy day (how I remember the fearful storm and shipwreck that occurred in that holiday), someone in the hotel casually mooted the possibility of an outing to the Norfolk Broads.

Somebody else, I clearly remember, mentioned the Swallowtail butterfly. Probably the whole conversation arose only in relief of boredom, but somehow or other the grown-ups (including my parents) found themselves let in for the project. It was a beautiful day as we set out. But, alas, our horse-brake became jammed with another vehicle in the narrow streets of Cromer (how steadily and patiently those horses, which were uninjured, did stand!); and the whole project was, with unconcealed relief, abandoned and never revived. The grown-ups clearly felt that they had done their part; and that the merciful intervention of fate should be accepted without demur. No one took the slightest notice of the tragic disappointment of a very little boy who had so wanted "to see the Swallowtail butterfly": (as it happens I still have not seen the Norfolk Broads). A day or two later, on a visit to Pretty Corner, I was sufficiently alerted to notice the large grey butterflies (which I later knew to be Grayling) flying briskly about the heath, and to ask whether these were Swallowtails: only to meet with the rebuke that they were "just butterflies".

Well, I could make my own opportunities; and in the following March

I set out on the Bristol Downs with my previous summer's shrimping-net and the express determination of finding the very kind of butterfly that had cheered my sick-room nearly two years previously. And so on 20th March 1913 I with the aforesaid implement actually caught a very early specimen of the species: my first butterfly—which I still possess—a Small Garden White. I was not again to see a specimen of this species flying on just such early date for precisely forty years.

I continued so to use the shrimping-net until the following year, when a neighbour said she would report me to the R.S.P.C.A. if I caught another butterfly; and, to emphasise her remarks, took away my shrimping-net. I can still see the look of gloating exultation on her face as she deprived me of my solitary possession, other than my clothes. For a time I was reduced to trying to knock down specimens with a stick. It is surprising that in one or two so taken, there was but slight damage.

At about this time too I suffered particularly from the intrusions of the hordes of honorary relatives who seemed to infest every household in those days, and who appeared to regard children as existing solely for their entertainment. Many was the specimen I lost through having some vivacious or wanton finger poked right through it as it lay in my collection housed in soap or confectionery boxes with a layer of corrugated cardboard at the bottom of each to receive the common pins. My grief at such an event seemed to occasion the greatest amusement. The contagion of indifference, or worse, spread to the domestic staff: and on one occasion I found a member thereof flicking a duster in my boxes. My livestock (however discreetly or remotely housed) was consistently thrown out in the bushes, or scalded. All in all, it is scarcely to be wondered at that of the total of some 250 specimens of butterflies and moths that I took from 1913 to 1917, inclusive, less than 30 have survived. These survivors do, however, include a specimen of the Scarce Hook-tip.

There was one particular excitement in those early days which perforce has progressively become rarer over the years and which perhaps may not now recur (since I have already taken 67 species of butterflies in Britain), though I am always hoping: and that was the catching of species of butterflies new to me. This was an especially vivid experience in the case of the taking of two new species in one day. And on each of just two occasions (both in 1918) I caught three. With better facilities I could of course have stepped up the rate but as it was I just had to be content with the patch of green (any such far more productive then than now of course) nearest to my home, with rare exceptions, and perhaps I derived the greater satisfaction from the comparative infrequency of the occasion. And also I learned, in the hard way, to make the best use possible of whatever facilities were available to me: hence perhaps now my self-taken 67 species. Looking at my diary I see that in my first collecting season, 1913, I took four different species of butterflies. In 1914 I added four, in 1915 six, in 1916 one; and in 1917 I added four. I had of course some near misses during this time: including in 1917 a Brown Hairstreak in Leigh Woods, a place in which I have never seen or heard of this butterfly since and a species which I was not to take until 1926 in Huntingdonshire (although I did see one specimen in the Forest of Dean in 1924).

At about the time of the start of the Great War the decision was made for me—I was 10—that my career was to be in the Royal Engineers. And the edict went forth that (apart from stamp-collecting which had

always been fostered) my "hobby" was henceforth to be machine-drawing only. This was just a word to me; however, I managed in part to satisfy the requirement by making drawings of steam engines. But butterflying was definitely taboo. I had, however, the support of two school-friends whose parents not only strongly encouraged them in entomological activities but managed to convey a little of their own attitude to my family; with the result that in the following year, 1915, there was some slight relaxation of the ban (though not before a treasured capture—as it then was—a Common Yellow Underwing, was reft from me and released before my face). And these two friends in 1914 also surreptitiously lent me each his own book on British Butterflies (Edward Newman's and A. M. Stewart's), since I had none. I had had a natural affinity for Latin ever since I was introduced to the language at the age of six; and I now learned the Latin names (most of these were genuinely classical) of the butterflies and larger moths in a week or so, incidentally to the marked discomfiture of a genteel loafer of mature years who essayed to patronise me with them.

It is a curious fact, however, that early in 1913 my father had bought copies of *The Entomologist* for me retrospective to the beginning of that year. And, although my sight of this journal ceased very soon, my father must have inadvertently kept the subscription continuing after he returned to India; for, some years later, I found a whole run of the journal, up to about 1921, in an attic.

It is interesting to recall that in those very early days I thought that the Purple Emperor might be a denizen of almost any oak; and I would be continually scanning the tops even in the fields and lanes just by my home, or on car excursions in Gloucestershire with one of my two friends. How narrowly then I missed sight of a specimen, I was not to appreciate until later. However, I did first see the Purple Emperor, in Somerset, in 1918.

In 1914 one of the these friends obtained some superb specimens of the Painted Lady on waste ground near our homes. Although I was precluded from availing myself of the information imparted to me, nothing stirred my nascent entomological imagination more than this beautiful short series which was set for my friend by his father.

I have said that restrictions were eased in 1915: I was permitted to make a primitive net for myself (setting was still on cardboard—but it was, and is, my own). Nevertheless I was not allowed to take this net with me when visiting the close relatives in Wiltshire in 1915. However, on our arrival by car, my uncle, surprised at the omission, lent to me from a cupboard in Edington Church of which he was Vicar, in the hope that I might be able to make some entomological use of it, a net normally used for catching bats. And I did in fact, to my infinite joy after my frustration of the previous year, catch with it my first Painted Lady (I have it yet) on the hill top on that day trip on 8th June 1915.

When I was mocked for my devotedness, I replied that I thought so much of the occasion that I would on the exact 50th anniversary of the day return to this place and think on these things. I duly kept my vow, not having been to the exact spot in the meantime, with the peals of half a century agone still ringing in my ears.

At Bournemouth in August and September 1915 I caught quite a number of specimens, including my first Graylings: and the family holiday was further marked by an incident wholly fortunate for me. My swim-

ming instructor called out to my parents in the balcony (my father being on short leave from India), "what will you give him if he swims the length of the bath?" The reply came down, "a case of butterflies". Since this was only my third lesson, the promise seemed to carry no danger of fulfilment. However, I swam the 75-foot length of the Bournemouth bath with ease: and the promise was kept—no common outcome in those days when a promise to a child was usually just an expedient. This type collection of British butterflies was to be of the utmost usefulness to me for reference. Furthermore, my father gave me, on 16th September 1915, my first butterfly book—W. S. Coleman's "British Butterflies".

When, however, backed by my father, I enquired for a list of British Lepidoptera, the dealer laughed in my face. There wasn't, wouldn't be, couldn't be such a thing (let alone one with the English names as I had expressed the additional hope). This rebuff left me with a firm resolve, at which (having meanwhile acquired a further book, W. J. Gordon's) I was to make some primitive essays (how then and subsequently I was to value my Latin!) in the following year 1916; and on which I was to embark in earnest in 1927.

In this early period and even up to about 1923 all killing was by means of crushed laurel-leaves: a method having advantages which I still appreciate.

In my first breeding-cage (also given to me in 1915) there emerged in 1916 some Swallowtails from bought chrysalids "from the Norfolk Broads". Although I did not put these in my collection since I had not taken them myself (a priniciple which I have strictly maintained throughout), I did acquire knowledge thereby; and in this and in my second breeding-cage (purchased from Mountney of Bristol in 1916) I was soon rearing numbers (nearly all subsequently released by myself) of Buff-tips and Common Magpies and the like.

In 1916 also I made the acquaintance of Mr Swaine of Bristol (I was later to overlap by a term the career of his son at Clifton College) who was a friend indeed to me in the pursuit of my hobby. At Clifton, however, where I had been looking forward to enlarging my scope, I soon found that in those days all aspects of Natural History were "nefas". Mr Swaine even lent me a small cabinet. When in 1918 I returned this to him (I take the opportunity of recording that he died in September 1920), having acquired a couple of show cases, I was persuaded by the ladies to scrap a large part of my specimens "to save space": (this was their swan-song, apart from the giving twenty-four years later and while I was abroad of several hundred of my books, including quite a number of entomological ones, to "salvage").

In 1916 also, becoming for the first time the recipient of pocket money, I saved my shilling a week until I could buy some proper setting-boards (I have kept to the saddle kind). My activities in the field were, however, extremely localised until, on 7th June 1917, I became the owner of a bicycle (which, however, I was not to be able to use for two months owing to an initial accident). And, although there was to be no relaxation of the policy that on no account was my career to be of my own choice, after the retirement of my father from India in that year I found in him an ally and companion of ever-increased staunchness in the entomological field. My first packet of entomological pins (white), purchased at this time by my father from Gunn of Bristol, was a boon and a revelation.

I think that in part this change of heart was initiated by natural reaction to a most extraordinary incident. When collecting in the late summer of 1917, I found myself accosted by a horrible old man who asked if he could see my catch. When, out of politeness I handed my collecting box to him, he snatched one specimen from its laurel pad before I could stop him and proceeded to rub all the scales off the wings: expatiating all the while on the pleasurable sensation ("velvet to the touch", etc.) that this process gave him. When I told my father of this incident, he lay in wait on more than one day suitably equipped to confront the character concerned: but we never saw the old reprobate again.

The idea of the Royal Engineers had been dropped—I never discovered why—but deaf ears were turned to my own request to be trained for a zoological degree with a view to proceeding to museum service. Instead it was settled for me that I should go either into the I.C.S. ("plenty of butterflies there") or into the Colonial Administrative Service: and so it remained.

On the 1st of May 1919 I became, with the encouragement of my grandfather and exactly a month before his death, a member of the Bristol Naturalists' Society—a membership I have maintained ever since.

There still remained traces of the old restriction which were manifested from time to time (for example when I alluded to Museums). And it was not until he was dying that my grandfather (also a Robert Dick) told me about his uncle, Robert Dick the great Scottish naturalist and geologist (whose Centenary Exhibition I opened at Thurso last year), a connection which he had actually been asked to keep concealed from me. However, as my grandfather remarked, heredity—without any knowledge of the bearing thereof—had triumphed in the end.

"Belfield", Burnham-on-Sea, Somerset. 6.vii.1967.

Notes and Observations

Butterflies of the Balearic Islands.—Mr. T. R. New, in his interesting note on p. 171 of the June "Record", states that Fritillaries are generally scarce in these Islands. He and others may be interested to know that during a short run ashore from my ship at Pollensa Bay on the east coast of Majorca, I captured the most magnificent Fritillary of my whole life, a freshly emerged female *Argynnis pandora* Schf. It resembles a very large and bright version of ab. *valesina* of *A. paphia* L. with the underside surface of the front wings a brilliant pink colour. My data label reads "30.vi.1925, Pollensa". This superb species was certainly breeding at Pollensa forty years ago.—Commander G. W. Harper, R.N. Retd., Neadaich, Newtonmore, Inverness-shire. 21.vi.1967.

Bats in Mercury Vapour Traps.—The Baron de Worms says in his note in the June "Record" that he has never known a bat to be caught in a m.v. light trap. This happens in my trap quite regularly, and has occurred about once a year each year since 1963, and I have recorded it in my "Inverness-shire Notes". The species is definitely the Long-eared Bat, which on every occasion has consumed the bodies of every moth in the trap! After the first occasion, I made some notes on the hunting behaviour of the bats at my trap and elsewhere in my garden. Two species, the Long-eared and the common Pipistrelle are present, and their

methods are very different. The Pipistrelles all always circle the trap at not less than twenty feet altitude above it and the wings drift down on and round the trap. The Long-eared bats both in the neighbourhood of the trap and elsewhere hawk much lower, and I have frequently seen one skimming within a few inches only from the m.v. light bulb; it does not therefore surprise me if occasionally one touches a vane with its wing-tip and dives in head first!—Commander G. W. HARPER, R.N. Retd., Neadaich, Newtonmore, Inverness-shire. 21.vi.1967.

DIASEMIA RAMBURIALIS DUP—A slightly worn specimen of this rare immigrant was taken in my moth-trap at Camberwell, London, on the night of 12-13th July. The trap was switched on at 10 p.m. and left on until 4 a.m. There is an article written by Mr. R. F. Bretherton printed in the *Ent. Rec.* for January 1962, giving a first-class account of this species with a list of all the records of its occurrence in Britain. Although the majority of specimens recorded were taken in September and October, there are three previous records for July. Mr. R. A. French, of the Rothamsted Experimental Station, Harpenden, Herts., has informed me that the last record previous to my own was of one specimen taken at Rye, Sussex, in 1963.—S. WAKELY, 26 Finsen Road, London, S.E.5.

LIMNELLIA STENHAMMERI ZETT. (DIPT. EPHYDRIDAE) IN SURREY.—In the early spring of 1965 several '*Scatella*' with very dark wings were swept from *Erica cinerea* L. growing under *Pinus sylvestris* L. at Ockham and Wisley Common, Surrey. These proved to be *Limnellia stenhammeri*, a rarely observed species which does not appear to have been recorded in South-east England.

Mr. J. E. Collin in his key to '*Scatella*' (1930, *Ent. mon. Mag.*, **66**: 133-9) refers the species to *Stictoscatella* Collin 1930 but Kloet and Hincks (1945) use the earlier generic name *Limnellia* Malloch 1925. Collin only records the species from Dorset, Inverness and Sutherland, though he indicates that a wider distribution may be expected.

The British Museum Collection contains four specimens:—one 21st July 1908, Balmaha, Stirlingshire, J. J. F. X. King; one 4th August 1910, New Forest, J. J. F. X. King; and two 24th July 1937, Braedownie, Angus, at 816 ft., R. L. Coe. Mr. Coe informs me that his specimens were taken at the head of a grassy glen with birch and a little heather on the sides, but understandably after thirty years, he is not quite sure of the habitat from which his specimens were obtained.

Additional information is found in two short published notes. Mr. P. H. Grimshaw in 1909 reported the species new to Britain as a result of its capture on the window of a house in Edinburgh by Mr. J. Waterston (1909, *Ann. Scot. nat. Hist.*, **1909**: 249-50). An interesting record from the Midlands is given by Mr. H. Britten (1938, *Rep. Trans. Manchr ent. Soc.*, **38**: 65) who exhibited to this Society the species taken on the 7th January 1940, at Rudheath, Cheshire.

Present records show that the species is on the wing in the first few months of the year and in late July-early August. Its occurrence on dry heathland, as in Surrey, is possibly a reason that records are sparse, since this terrain is noted chiefly for its larger 'game'.—ALAN E. STUBBS, 91 Clitherow Avenue, Hanwell, W.7.

TETRACHLOROETHANE AS A KILLING AGENT.—With reference to Mr. Homer's remarks regarding the breaking of his cyanide killing bottle during his expedition to Trinidad (1967, *Entomologist's Record*, **79**: 170), I have long ago given up Cyanide as a killing agent and use *Tetrachloroethane* (Acetyline Tetrachloride) or (CHC1 2)2.

It has several advantages over Cyanide. It can be used in any suitable jar on a pad of cotton wool tamped down with circles of blotting paper. There is no problem of a weak bottle as it can be topped up whenever necessary. If the bottle is broken there is no problem over the disposal of the shards and the cyanide impregnated plaster-of-paris. It acts very quickly on such cyanide-resistant groups as Zygaenids and Acraeids. I have not found it has any reaction on colours.

It is, of course, poisonous and the makers' label on the bottle carries warnings against inhaling the fumes, which can cause Toxic Jaundice, and it should not be allowed to stand near a naked flame.

Its one disadvantage is that insects left too long in the killing bottle tend to become rather stiff, presumably through its grease solvent properties, but as insects can be safely removed from the killing bottle after ten minutes exposure this disadvantage is not a real one.—D. G. SEVASTOPULO, F.R.E.S., Mombasa. 9.viii.1967.

DEILEPHILA NERII L., LARVAL COLOURATION.—Some years ago (1947, *Entomologist*, **80**: 218) I pointed out that the larva figured in South's *Moths of the British Isles* had undergone the pre-pupational colour change. The description, which agrees more or less with the figure, is said to have been made from a preserved larva.

Recently, when in England, I had the opportunity of looking through Stokoe's *Caterpillars of British Moths* and was surprised to see the larva of *nerii* figured with a pale cafe-au-lait ground colour, the description reading as follows: "The caterpillar when fully grown is about 4 inches long, stout of body and slightly tapering towards the yellowish head. The general colouration of the body is ochreous and there is a divided brown spot on the ring nearest the head and two larger bluish spots surrounded by a blackish ring on the third segment. These spots each enclose two whitish clouds. The body is well sprinkled with white dots and a narrow whitish stripe runs along the sides. The spiracles are black with pale ochreous margins and the horn is small, rough and drooping."

The "divided spot on the ring nearest the head" only appears with the preputational change of colour and, incidentally, is not shown in Stokoe's figure.

It is difficult to understand why neither of these authors describe or figure the normal green form of this larva. The ochreous form is far the rarer, in India I found one wild one only, whilst in East Africa I have found only three or four, when I must have seen hundreds, if not thousands, of the green form. If larvae are reared in very overcrowded conditions, a mustard yellow colour form sometimes occurs. All these non-green forms have a series of darker lateral triangles in addition to the usual markings in the last instar. These are not shown in Stokoe's figure, which is a normal green larva with the green colour replaced by cafe-au-lait.

I have not had the opportunity of examining Buckler's *Larvae*, but Kirby in *The Butterflies and Moths of Europe* refers to a green and an ochreous form of larvae and figures, rather badly, a green larva with a

distinctly yellow anterior four somites. In *British and European Butterflies and Moths* the same author describes the larva as being green with a green or brown head and the anterior three and the last somite yellow, but does not figure it—a pity, as the plates in this book are far better than in *The Butterflies and Moths of Europe.*

Rowland Brown in *Butterflies and Moths at Home and Abroad* does not describe the larva, but states that it has been found feeding on potato at Eastbourne, an obvious misidentification for *Acherontia atropos.*

Going further afield, Moore in the *Lepidoptera of Ceylon* describes the larva as green and so figures it, with an additional green and pinkish immature larva, probably 4th instar. He also figures and describes the prepupational colour phase. Hampson, *Fauna of British India,* Moths, i, describes the larva as green, and Bell & Scott, *Fauna of British India,* Moths, v, describe and figure the larva as green, but also mention an ochreous form.

Seitz does not describe the larva in either the Indo-Australian or African volumes. I have not got the Palaearctic.

Stokoe gives as food-plants the two Periwinkles, *Vinca major* and *V. minor* and Oleander, *Nerium oleander,* all Apocynaceae, as well as *Vitis vinifera* (Ampelidaceae), but this last is almost certainly wrong.

Abroad the following have been recorded:—*Acokanthera, Adenium, Carissa, Conopharyngia, Ervatamia, Holarrhena, Nerium, Picaralima, Rauwolfia, Tabernaemontana, Thevetia, Vinca, Voacanga* (Apocynaceae), *Burttdavya, Cinchona, Gardenia, Mitragyna* (Rubiaceae), *Jasminum* (Oleaceae), *Mangifera* (Anacardiaceae), *Apodytes* (Icacinaceae), and *Bambusa* (Gramineae). Despite undoubted records of Rubiaceae as food-plants (all, incidentally, species that are also eaten by the normally Apocynaceous and Asclepiadaceous feeding *Nephele*) I am very doubtful of the correctness of *Gardenia,* which I think is a mis-identification of *Tabernaemontana,* the Mock, or False, Gardenia of tropical gardeners. *Jasminum* is probably a mistake for *Landolphia* (Apocynaceae), the flowers being very similar, and *Mangifera* may be *Conopharyngia,* both having leaves of a similar size and shape. *Bambusa,* I am sure, is completely wrong.—D. G. Sevastopulo, F.R.E.S., Mombasa. 23.vii.1967.

A Good Night in the Chilterns.—On 13th July, Bernard Skinner and I visited what is becoming a well-known wood in the Chilterns. The night was ideal and the temperature did not fall below 65°F. during the night. We ran four m.v. lights and logged 126 species of macros, including *Amathes diptrapezium* Schiff., *Cosymbia annulata* Schulze, *C. linnearia* Hübn., *Discoloxia blomeri* Curt., *Abraxas sylvata* Scop., *Xanthorhoe quadrifasiata* Clerck, *Sterrha straminata* Borkh. and *Zeuzera pyrina* L. We were pleased to take a female *Selenia lunaria* Schiff. which has since laid freely.

The first *Trisateles emortualis* Schiff. came to the sheet at 10.15 p.m. and others arrived throughout the night. We took 26 examples of this species but only two females were in anything approaching fresh condition. These we kept for eggs. As the moth had evidently been out for some days, it is surprising that Bernard Skinner did not see it when he worked the same spot on 10th July on a good night when 95 species turned up.—R. G. Chatelain.

PELECOCERA TRICINCTA MEIG. (DIPTERA, SYRPHIDAE) VISITING FLOWERS.—Some years ago the late Mr H. F. Audcent gave me a female *Pelecocera tricincta* that he had taken, with others, in the New Forest, Hants., on 14th August, 1930. As I had never seen the species alive I enquired as to where it had occurred and was told that it flew low in the rides visiting flowers, probably buttercups.

Last year, on 21st June, when on my way to meet Mr A. W. Jones, then on holiday near Wareham, Dorset, I stopped a few miles north and collected along the roadside. I found some females of this species feeding in the flower heads of Cat's ear, *Hypochaeris radicata* L. Later that hot sunny afternoon, Mr Jones and I found further females on these yellow flowers. Four days later, I found another female in Ferndown Forest taking pollen from the same species of flower at the edge of the woodland road.

Recently having arranged to meet Brigadier H. E. Warry and Mr. H. Symes on 18th July close to where I had found *P. tricincta* the previous year, I made a search whilst waiting their arrival despite an overcast sky and slight drizzle at times. I was fortunate in finding not only more females but also one male *tricincta*. The species seemed to be confined to the roadside verge, flying low, and visiting the heads of *Hypochaeris radicata*, although one female was found head first in the flower of a dandelion, *Taraxacum officinale* W.

Verrall in *British Flies* VIII, 1901, gave his earliest date as 29th June, his latest being 30th August.

The length of my specimens very from 5-8 mm. and as stated by both Verrall and by R. L. Coe (*Handbook for the Identification of British Insects* X, *Syrphidae*, Roy. ent. Soc., 1953) the bands of the abdomen are entire or may be separated on one or more segments by a black median line. However, neither mention the distinctive grey dusted and white haired patch on the mesopleura matching the white dusted face in both sexes. Seen almost face on, these patches show at the back of each side of the face and must be noticeable and distinctive to the flies as they approach each other. In other flies with 'shimmer' patterns a 'flashing' display takes places in courtship.

Verrall mentioned that Egger had said that both this species and the *P. latifrons* Lw. were to be found (presumably in Austria) on the rock rose, *Helianthemum valgare* (=*H. chamaecistus* Mill). It is to be noted that all four flowers mentioned are yellow in colour.—L. PARMENTER.

CONSERVATION.—There have been a few references in the "Record" to the conservation of insects, and many to disappearing habitats, etc. This should worry every naturalist and I would like to mention one way in which all entomologists can and should help. That is by joining their local (or any) County Trust for Nature Conservation, the address of which can be obtained from the Shell Nature-Lovers' Atlas, compiled by James Fisher, and obtainable from most booksellers or by writing to The Council for Nature, 41 Queens Gate, London, S.W.7. The Scottish Wild Life Trust, 8 Duke Street, Edinburgh, 1, functions in the same way as the County Trusts in England and Wales.

I think most Trusts are short of active entomologists and would welcome advice on the habitats of rare, local, interesting or desirable species. Deciduous woodlands, heaths, downs, etc., are all in danger of

destruction, and if every reader would make it his duty to discover and promote as many threatened habitats as possible for protection of some sort, it would be a big step towards worthwhile conservation. I am at the present moment, endeavouring, with the help of the County Trusts, to obtain protection for certain habitats supporting local insects, and this is very satisfying.

The desperate situation was made evident when I visited a small area in Rockingham Forest where the Duke of Burgundy fritillary (*Hamearis lucina* L.) occurred a few years ago. A 20-30 feet wide track had been bulldozed through the site, and the rest of it was replanted with conifers. There did not seem to be much point in looking for *lucina* for long but if the Forestry Commission had been informed in time, it might have been possible to save this butterfly. I would therefore call for urgent action before we lose much more of our insect heritage.—S. L. MEREDITH, 283 The Broadway, Dudley, Worcs.

THE PREY OF TWO SPECIES OF MEDETERUS (DIPT., DOLOCHOPODIDAE).—In his study of *Scolytus scolytus* F., *S. multistriatus* Marsh. and *Pteleobius vittatus* F., the beetle carrier of Dutch Elm Disease, at Wytham Wood, Berks., Dr. R. A. Beaver mentioned in *Ent. mon. Mag.*, **102** (1967) that two species of *Medeterus* were responsible for most of the larval predation and that they in turn were devoured by larvae of the Cantharid beetle *Malthodes marginatus* Latr.

It would seem that these two species of *Medeterus* were now identified as *impiger* Collin and *nitidus* Macq. for he records in *Trans. Soc. Brit. Ent.*, **17**: 142 (1967) (as *Medetera impigra* Collin and *M. nitida* Macq.) that their larvae ate many Chalcid larvae and attacked Braconid larvae within their cocoons and as subcortical predators of the Scolytids at Wytham Wood.—L. PARMENTER.

THE CAPTURE OF A TERATOLOGICAL SPECIMEN OF CHEILOSIA MUTABILIS F. (DIPTERA, SYRPHIDAE).—I swept an unusual female of this species that was feeding in the flowers of Wood Spurge, *Euphorbia amygdaloides* L. in Mincing Wood, Blean Woods National Nature Reserve, Kent, on 13th June. The right hind femur has a mended fracture at a quarter from the apex. Both left and right hind tibiae are fractured at the centre, the two halves being mended at right angles. Both hind legs have the first tarsal joint dented above at the end of the first third portion and then curved outwards from this dent. The legs, except for the femora, are symetrical. The only other abnormality is that the tarsal joints of the hind legs are not black as in a typical female but buff to brown.—L. PARMENTER.

ACHERONTIA ATROPOS L. IN BEDFORD.—I think it worth recording the fact that on 2nd August, 1967, I was given a caterpillar of the death's head hawk moth which was found near some potato plants growing in an allotment at Bedford. It was ready to pupate and when placed in a container with some bulb fibre it soon buried out of sight. The following day a friend found another caterpillar only a few yards from where the first had been discovered. These two larvae are believed to be the first of their species to be recorded in Bedfordshire since 1956.—TERENCE F. KNIGHT, 20 Cutcliffe Grove, Bedford.

Obituary

KENNETH SELF (1885-1967)

The early months of 1967 have indeed taken a grievous toll of several noted collectors of our lepidoptera, and not least among them has been Kenneth Self who passed away on 12th May at the age of 82 after a prolonged illness of nearly three years.

He was born in the vicinity of Epping Forest where he spent his boyhood and the first 25 years of his married life. It was in these fine and famous surroundings that he developed his love of Natural History and his flair for collecting butterflies. He used to tell how in his youth he several times saw the Purple Emperor flying in the forest. It is doubtful whether it has been noted at all there this century. Like his father and grandfather, he was in the well-known firm of Baring Brothers until he retired when he was well in his 60's. He served in the First World War and was wounded in 1918.

During his long life he built up an extremely fine assemblage of nearly every species of British Butterfly all mounted and set out in a very attractive manner showing all his many varieties of them to their best, for he was very particular about the prime condition of his captures. There is no doubt that the Blues were his first love, and in this group he excelled, taking some superb aberrations. It was while living at Corfe after the 1939-1945 War that he caught on the slopes round the ancient castle there a magnificent ab. *extrema* of the Chalk-hill Blue, one of the best ever obtained in this species. His final haven was Folkestone where he lived since the early 1950's and collected assiduously on the downs where he secured many fine forms of the Chalk-hill and Adonis Blues which he lived to see sadly depleted in those famous environs.

He will indeed be sorely missed by all who remember his quiet charm and the delight with which he was always ready to welcome his many entomological friends and show them the riches of his fine collection. Every sympathy goes out to his widow who had helped him so much through the years culminating in their Golden Wedding in 1962.

C. G. M. de W.

Current Literature

Ein kritischer Beitrag zur Taxonomischen Klarung einiger Palaerctischer Arten der Gattung Scrobipalpa (Lep., Gelechiidae). By **Dr. Dalibor Povolny.** Acta Scientium Naturalium Academiae Scientiarium Bohemoslovaceae, Brno. 1 New Series 1967, No. 6.

I have received from Dr. Povolny a separate of his latest paper on the Gelechiidae. The paper is in the German language with a summary in the Czechoslovak language, and shows no falling off in the author's astonishing industry.

Two new subgenera, *Euscrobipalpa* and *Ergasiola*, are set up, and out of forty-four species dealt with, sixteen of them are new. The paper is illustrated by 115 figures of genitalia dissections, and there is a page of sixteen wing-pattern drawings by Dr. Gregor to illustrate the new species.

Enquiries from abroad should be addressed to: Artia, Ve Smeckach 7, Brno, Czechoslovak Republic.—S. N. A. J.

Review of Pacific Monograph 11, "Lepidoptera of American Samoa with particular reference to biology and ecology". By **J. A. Comstock.**

Comparatively few Lepidoptera have had their early stages illustrated: a statement true even for the British Isles and North America where most of the smaller species still remain to be figured. It is pleasing to see that in the latest Pacific Islands Monograph, the author, who has published several previous papers on the early stages of Lepidoptera, has illustrated in colour one or more of the immature stages of 27 species of Samoan moths and butterflies together with half-tones of the imago. The text deals with those species collected by the author in 1961 on Tutuila, Auruu and Swain's Island, and lists species previously recorded from American Samoa but not collected by the author. Useful information concerning food-plants and other notes of ecological content are given. 118 species are dealt with, representing 26 families in the Microlepidoptera, Heterocera and Rhopalocera. There is a good bibliography, an index to insect names and a separate index to food-plant names.

Together with the coverage by Tams, 1935, Insects of Samoa, Part 3, Lepidoptera, 4: 169-290, Brit. Mus. (Nat. Hist.), London, this new well-produced work by Dr. Comstock makes a valuable contribution to our knowledge of the Lepidoptera fauna of Samoa.—A. Watson, Department of Entomology, British Museum (Natural History).

The Methuen Handbook of Colour. By **A. Kornerup, D.Sc.,** and **J. H. Wanschen, M.Sc.** 8vo, 243 pp., 50/- in U.K., Methuen & Co., Ltd., London.

To one who has never looked on colour as a science, this book is a revelation, and the colour work is a marvel which leaves one wallowing in thoughts of the technical difficulties to be overcome in printing the thirty colour charts.

After an introduction by Donald Pavey, a member of the Colour Group (Great Britain), pages 7 to 16 explain the use of the book, and in this, the Danish authors and the translator have achieved a rare balance in such a work, for they, unlike many authors, set out by assuming that the reader knows nothing of the subject, but, and here is the difference, they also assume that the reader is a person of reasonably high intelligence. So many teachers either fear to explain simple things for fear of insulting their readers, or, if they do explain them, they tend to patronise their readers to the annoyance of the readers. These pages describe the subject under three headings, The Identification of Colour, Colour System, and Colour Harmony and Contrast. The first section deals with the subject under subtitles The Variety of Colours, Colour Memory and Instructions how to use the Finder, a card device for viewing the sample for comparison with the charts, supplied in a pocket inside the back cover. The second has the sub-headings The Colour Variations, Hue, Intensity, Tone, The Notation, Colour Key, Colour Description, The Grey Scale, The Colour Cylinder, and Colours not Included in the Plates, while the third section carries the headings The Interplay of Colours, Colours of different Tone, Colours of different Intensities, Colours of the same Key, and the combining of Colours of different Hues.

The 30 Colour Charts follow. These consist of double pages of 48 rectangles of colour in six columns of eight headed A to F from left to right, and 1 to 8 from bottom to top. The system is that the A8 rectangle

is 100% colour, while the lower rectangles in the column become progressively lighter by reducing the screen so that more white is shown until A1 at the bottom is 100% white. The bottom line to the right of the white shows five transparent greys darkening progressively, and these are overprinted over the B to F columns, all of which were first printed as column A.

Following the plates, an interesting account of colour through the ages, suggesting that colour was used as far back as 150,000 to 200,000 years ago when ice age man buried his dead in red ochre and painted their bones a red colour. The cave drawings of Spain and southern France date back some 20,000 years and show a remarkable degree of artistry in the use of the few colours available to the artists. The section is headed The Naming of Colours, with the sub-headings When and Where Colour Names developed, How Colour Names developed, and A modern Colour Dictionary.

The next section is headed From Colour Name to Colour Sample, followed by an alphabetical list of colour names, each with the reference to the relevant plate, a description of the colour, and the derivation of the name. This is followed by a section From Colour Sample to Colour Name. This has charts showing the name areas in each of the thirty plates, with a list of the colour names applying to that plate. Finally there are two conversion tables, the first from Colour Samples to Munsell Notation, and the other, from British Standard to Methuen Notation.

This small book, suitable for the pocket, carries a very high proportion of the information in the larger and more expensive standard works, and enables colours to be named so that they may be universally understood all over the world, which should make it very useful to entomologists in the description of species and varieties, giving their descriptions an added accuracy.—S. N. A. J.

Current Notes

The Teen International Entomology Group.—My attention has been called to this organisation, which seems to me to be big with possibilities. It is a volunteer youth correspondence club dedicated to the study of entomology. The present membership is in the region of 1,000 spread over the United States, and some fifteen other countries, including well over 100 from England. Its main purpose is to bring together young entomologists for the purpose of sharing their knowledge, discussing their successes and failures, and expanding their collections by means of correspondence. The only requirement for membership is that one must have a willingness to correspond with other entomologists, to give aid, and possibly sell or buy or exchange dried specimens. There are no dues or subscriptions and there is a welcome for both beginners and more advanced collectors.

A Newsletter is published quarterly, and the membership list is revised annually and sent to each member in December.

To join the group, all that is necessary is to write to Miss Colleen Seeley, Editor T.I.E.G., 47 Woodside Avenue, Oneonta, New York 13820, U.S.A. The society is sponsored by New York State Co-operative Extension, Cornell University, Ithaca

It is my opinion that societies of this nature, beside widening the outlook of their members beyond their parochial borders, will do more towards world peace than all the party politicians in the world, by inspiring personal friendships, which by their common interest, will outlast many years and survive strains which would disrupt mere treaty friendships.—S. N. A. J.

The Thirteenth International Congress of Entomology is scheduled to take place in Moscow between 7th and 9th August 1968, and The Royal Entomological Society has asked Messrs Thomas Cook & Son Ltd., 54 Brompton Road, Knightsbridge, London, S.W.3, to make the necessary travel arrangements.

This firm has accordingly drawn up a preliminary schedule for travelling to and from the Congress with an all-in accommodation rate, and also for the post-Congress tours arranged by Intourist. They are interested in enquiries, and are willing to accept bookings any time up to 26th June 1968, and to supply information in reply to enquiries.. They ask that such enquiries be sent direct to them at the above address, and not to the R.E.S.

The Annual Exhibition of the Amateur Entomologists' Society will be held at the Hugh Myddelton Secondary School, Corporation Row, London, E.C.1, on Saturday, 7th October 1967, from 2 p.m.

Admission is free, and anyone interested in entomology will be welcome. The nearest station is Farringdon (Circle Line) and cars may be parked in the School grounds.

The South London Entomological and Natural History Society will hold its Annual Exhibition on 28th October in the Library of the Royal Society, Burlington House, Piccadilly, London, W.1. Visitors are welcome, and exhibits invited. Exhibits should be accompanied by a short descriptive account, suitable for publication in the Society's Proceedings, where a report of the exhibition will be published.

EDITORIAL NOTE

In order to obviate further misunderstanding, contributors of articles receive 25 copies, cut direct from the issue, free of charge. These copies usually include a portion of some other articles published. There is no need to order these, but if copies from remounted type, devoid of extraneous matter are required, these should be ordered at the time of returning the corrected proof, and are supplied at cost price.

We regret it is not possible to extend the 25 free copies to the authors of short notes, but if required, a few copies can usually be sent on request.

Additions and Corrections to Vol: 2

General

A. M. Swain died on 20th January, 1956. All Swain observations up to that date should be attributed to him or to him and his son, F. A. Swain, and after that date to F. A. Swain.

Species

L. populi L.

p. 2—

Sevenoaks Weald (div. 11), larva on *Salix fragilis* (E. A. Sadler).

S. ocellata L.

p. 3—

Clifford (*Young Nat.*, **7**: 253) records the form of the larva [as occurring in the Gravesend district], "which is adorned with rows of red spots".

A. atropos L.

p. 3:

line 18 from bottom—for **"atropes"** read: **atropos.**

p. 4—

Curtis (*Farm Insects*, 443) states that all his specimens of the Ichneumon, *Trogus atropos*, were bred (from *A. atropos*) or taken at Rochester, Darenth and other localities in Kent. Theobald (*J. S.-E. Agric. College, Wye*, **1910** (19): 171) states that in the Wye district in 1910, the potatoes "were much smaller with potato blight and the leaves shrivelled up long before the larvae were mature". The larvae "then passed on to the small bind-weed which grows so commonly in potato fields and plots".

H. convolvuli L.

p. 5—

A full-grown larva of the brown form was shown to A. A. Allen at Manston (div. 9) c. 1931 (A. A. Allen). 1962: Dartford (div. 2), ♀ on lamp standard, October 11 (B. K. West). 1964: Ickham, ♂ in m.v. trap, June 8 (D. G. Marsh).

Line 14 from top—for "*convoluli*" read: *convolvuli.*

S. ligustri L.

p. 6—

Two larvae on a cultivated *Spiraea* bush in Hayes (div. 1), 1942 (Sankey, *Ent. mon. Mag.*, **78**: 244). A larva on Laurustinus (*Viburnum tinus*) in Dartford (div. 2) (B. K. West). A larva on *Forsythia* in a garden at Platt (div. 11) (C. A. MacDermott).

H. pinastri L.

p. 6—

Orpington (div. 1), ♂ taken in light trap, July 8, 1963 (Webb, *Bull. Amat. ent. Soc.*, **1964**, 23 (263): 72). Westerham (div. 5), R. C. Edwards showed me a rather worn *melanic pinastri* he took on June 30, 1963, at light at his house (C.-H.). Willesborough (div. 12), one in m.v. trap, June 27, 1963 (W. L. Rudland). Goudhurst (div. 13), one at m.v.l., July 3, 1963 (W. V. D. Bolt).

C. euphorbiae L.

p. 7—

line 19 from bottom—for "*euphoribae*" read: *euphorbiae.*

line 27 from bottom—before "Bred" insert: "

C. galii Rott.

p. 9—

1955: High Halden (div. 11), "one seen by me flying over petunias in early evening in a garden among a lot of *P. gamma*" (P. Cue, *in litt.*). 1956: "A full-fed larva was brought to me in June 1956 from the Hoo region . . . the moth emerged 14th July 1956" (div. 2) (B. C. A. Earl, *in litt.*). 1959: Boxley (div. 7), August 14 (French, *Entomologist*, **95**: 175).

H. celerio L.

p. 11:

line 13 from bottom—delete first ":".

p. 12—

N.c.: Ramsgate (div. 9) (Dale, *Naturalist*, v.c./1837, **1**: 13). 1962: Kingsgate (div. 9), a perfect specimen found on November 8, by M. Condliffe, "at rest on a small grape vine in a north facing greenhouse and given to me" (W. D. Bowden, *in litt.*).

D. porcellus L.

p. 13—

Dungeness (div. 15), in m.v. trap, 1964. June 5-30 (105), with maximum (14) on June 25 (R. E. Scott).

D. elpenor L.

p. 13—

Faggs Wood, Ham Street (div. 12), about 30 *elpenor* at light, June 17, 1964 (C. G. Bruce).

M. stellatarum L.

p. 15—

"*M. stellatarum* in greenhouse at Forge Nursery, Northdown, Margate" (div. 9), on March 12, 1957 (W. D. Bowden, *Diary*). Lydd (div. 15), one, April 7, 1960 (C. G. Orpin).

H. fuciformis L.

p. 16—

Long Rope, Ham Street (div. 12), one, May 25, 1964 (C.-H.).

H. tityus L.

p. 17—

In a wood near Ashford, "I have several times taken the larvae there in July on its foodplant *Scabiosa succisa*" (Jeffrey, *Trans. E. Kent nat. Hist. Soc.*, **1906**: 17). Ashford, "we found the larvae several years in succession near here twelve or fifteen years ago" (Jeffrey, *Trans. E. Kent nat. Hist. Soc.*, **1908**: 12).

H. bicuspis Borkh.

p. 17—

Bexley (div. 1) (de Worms, *Lond. Nat.*, **1964**: 32). Orpington (div. 1), one in m.v. trap, June 17, 1966 (Watkinson, *Bull. Amat. ent. Soc.*, **25** (273): 139).

Line 11 from bottom—for "Gouldhurst" read: Goudhurst.

H. bifida Brahm

p. 18:

line 14 from top—transfer the following to between lines 11 and 12 from top: Eddington (div. 3), ♀, May 19, 1951 (D. G. Marsh). Meopham (div. 6), one, May 16, 1961 (J. Ellerton). W. Ashford, two, 1961 (M. Enfield). Willesborough, one, July 22, 1963 (W. L. Rudland). Dungeness, one, May 31, 1962 (R. E. Scott). Sandgate (div. 16), one, 1961 (N. Reay-Jones).

H. furcula Clerck

p. 20—

Sevenoaks Weald (div. 11), May 15-August 8, 1961 (5) (E. A. Sadler). Willesborough (div. 12), 1961 (2); W. Ashford, 1961 (2); Orlestone Woods, a larva, 1960 (M. Singleton). Willesborough, 1963 (2), 1964 (4) (W. L. Rudland). Ham Street Woods, August 19, 1955 (2) (W. E. Busbridge). Dungeness (div. 15), 1964, May 26 (1), August 4-13 (4) (R. E. Scott).

C. vinula L.

p. 21—

"Larva as frequent on Sallow as on Poplar in N. Kent. In one year a large number were noted feeding on Abele (*Populus alba*) shoots not more than a few inches high between Knockholt and Badger's Mount" (div. 5) (D. Lanktree, *in litt.*, 30.xii.1961). Higham (div. 2), larvae on apple, 1937 (Massee, *Rpt. E. Malling Res. Stn.*, **1937**: 207).

S. fagi L.

p. 21—

Eynsford (div. 6), several, 1964 (R. G. Chatelain). Westwell (div. 7), fullgrown larva beaten from low bough of beech, September 6, 1959 (D. R. M. Long). Covert Wood (div. 8), June 13, 1949; Dover Town, one, 1950 (G. H. Youden).

p. 22—

Chart Sutton (div. 11), larvae feeding on apple (Theobald, *J. S.-E. Agr. College, Wye*, **1910** (19): 94). Sevenoaks Weald, 1960 (5) (E. A. Sadler). E. Malling dist., several larvae on apple (Massee, *Rpt. E. Malling Res. Stn.*, **1936**: 225). Willesborough (div. 12), 1961 (one typical, one ab. *obscura*) (M. Singleton). Dungeness (div. 15), one in m.v. trap, June 19, 1964 (R. E. Scott); presumably casual (C.-H.).

D. dodonaea Schiff.

p. 23—

Ab. *purpurascens* , Orlestone Woods, one, June 4, 1961 (de Worms, *Entomologist*, **95**: 101; Messenger, *Proc. S. Lond. ent. nat. Hist. Soc.*, **1961**: 45, plt. 2, fig. 6).

C. ruficornis Hufn.

p. 24—

Sevenoaks Weald (div. 11), April 22-May 14, 1960 (43) (E. A. Sadler); Maidstone, one at light, May 26, 1955 (E. Philp). Ashford (div. 12), 1902 (Jeffrey, *Trans. E. Kent nat. Hist. Soc.*, **1902**: 38).

P. gnoma F.

p. 26—

Dungeness (div. 15), August 4, 1963 (1), August 11, 1964 (1) (R. E. Scott).

N. dromedarius L.

p. 29—

Dungeness (div. 15), 1963 (1), 1964 (4) (R. E. Scott). Sandgate (div 16), 1960 (2), 1961 (2) (N. Reay-Jones).

Line 6 from top—for "Eltham" read: Elham.

N. trepida Esp.

p. 30—

Sidcup (div. 1), two at lamp, 1895 (G. H. Hickling and H. E. Page MS.). Broad Oak (div. 3), 2 ♂♂ at electric light, May 30, 1952 (C.-H.). Covert Wood (div. 8), June 13, 1949 (G. H. Youden). Seven-

oaks Weald (div. 11), 1960 (4) (E. A. Sadler).
Line 17 from bottom—for "**45**H" read: **45**: 80.

p. 31—
Cranbrook (div. 13), 1961 (4); Biddenden, 1961 (1); Tenterden (div. 14), 1961 (1) (C. G Orpin).

L. cucullina Schiff.

pp. 31-32—
Farningham Woods (div. 1), imago and two larvae, 1962 (R. G. Chatelain). Orpington, about 10 in m.v. trap, 1964 (R. G. Chatelain); August 10, 15, 19, 1965, in m.v. trap (I. A. Watkinson). Downe (div. 5), two larvae on maple (C.-H., *Proc. S. Lond. ent. nat. Hist. Soc.*, **1962**: 102). Dover (div. 8), one or two annually in garden at m.v.l., since 1953 (G. H. Youden *in litt.*, 1.v.1962). Brook, ovum found on maple, May 30, 1949, imago emerged July 1949 (H. Symes). Willesborough (div. 12), 1957 (1) (W. L. Rudland). Orlestone Woods (div. 12), June 28 (1), July 24 (1), 1963, both at light (B. K. West).

L. capucina L.

p. 32—
E. Malling (div. 11), larvae on apple, 1956 (Massee, *Rpt. E. Malling Res. Stn.*, **1957**: 133). Dungeness (div. 15), one, June 5, 1964 (R. E. Scott).

O. carmelita Esp.

p. 33—
Eynsford (div. 6), one, flying, May 2, 1962 (B. K. West). Shorne Ridgeway (div. 6a), one, June 6, 1964 (E. J. Trundell). Hoads Wood (div. 11), several, 1961 (M. Singleton). Goudhurst (div. 13), at m.v.l., April 29 (1), May 12 (1), 1963 (W. V. D. Bolt).
Line 3 from bottom—for "1959" read: at m.v.l., April 1960.

P. plumigera Schiff.

p. 34—
Ashford [Wye] (div. 8)*, November 18, 1961 (Haynes, *Proc. S. Lond. ent. nat. Hist. Soc.*, **1961**: 58).

P. palpina Clerck

p. 35:
line 21 from bottom—for "Darneth" read: Darenth.

P. bucephala L.

p. 35—
Larvae in 1907 in several parts of Kent, on beech and goat Willow (Theobald, *J.S.-E. Agric. College, Wye*, **1907** (16): 162). Lewisham, one on a gas lamp, October 11, 1865 (Knaggs, *Ent. mon. Mag.*, **2**: 238). Woodnesborough (div. 4), ova and larvae on cob nuts and filberts, 1906 (Theobald, *J.S.-E. Agric. College, Wye*, **1906** (15): 73, **1907** (16): 72). Borden Hill, Sittingbourne (div. 7), over 100 larvae on cherry trees (Theobald, *loc. cit.*). Wye (div. 12), defoliating cobs (Theobald, *Insect and Allied Pests*, 292).

C. curtula L.

p. 36—
Meopham (div. 6), June 4, 1958, May, 18, 1960 (J. Ellerton).
Line 3 from bottom—for "willow" read: *Salix fragilis*.

C. anachoreta Schiff.

p. 38—
1964: Dover Town (div. 8), ♂ in m.v. trap, July 26 (G. H. Youden).

CHANGE OF ADDRESSES

Rear Admiral A. D. TORLESSE, to 1 Sway Lodge, Sway, near Lymington. Hants. S,O,4. OEB.

Dr. N. M. BAILEY, to 106 Romsey Road, Winchester, Hants.

G. WALLER, now of "Armanistan", Wade Lane, Havant, Hants.

EXCHANGES AND WANTS

Wanted.—Part 6, Vol. 4; Parts 2, 3, 7 and 8, Vol. 5; Part 1, Vol. 15; of "The Entomologist's Record".—*State price to Box 172, 'The Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

Wanted.—The Editor would be willing to buy a few clean, unbound, copies of the following at published prices: Vols. 5, 33, 35, 36, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 57, 62, 63, and 77.—*Replies to S. N. A. Jacobs, 54 Hayes Lane, Bromley, Kent.*

For Sale.—Bound Volumes, Nos. 7, 8, 9, 10, 11, 12 and 13, 'Entomological Record', excellent condition; what offers?—*Box SK669, 'Entomologist's Record', 59 Gurney Court Road, St. Albans, Herts.*

For Sale.—Formosan Butterflies, Moths, Beetles, Cicadas, Dragonflies, and other dried Insect specimens. Living Cocoons and Living Eggs of *Attacus atlas*, and Living Cocoons of *Saturnia pyretorum* in Season.—*Taiwan Novelty Co., P.O. Box 860, Taipei, Formosa, Free China.*

For Sale.—Complete collection of British Lepidoptera in 28 Glass-topped Drawers in Cabinet. What offers?—*John K. Moscrop, c/o No. 3 Hartington Road, Liverpool, 8.*

For Sale.—An erecting Binocular Microscope and two Monoculars.—*Full particulars from W. Parkinson Curtis, 2 The Close, Westminster Road, Poole, Dorset.*

For Sale.—Vols. 1 and 2 of F. W. Frowhawk's "Natural History of British Butterflies". "The Naturalist's Riviera", by A. N. Brangham. Both in first-class condition. What offers.—*Reply to C. W. N., Box No. 198, "The Entomologist's Record", 59 Gurney Court Road, St Albans, Herts.*

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For Sale.—Two large Oak Cabinets, each twelve drawers, containing every species of British Butterflies with very many varieties, collected by W. F. Burrows. Every specimen in good condition. Also a small eight-drawer Cabinet containing a variety of Dragonflies, Moths and Beetles, and 15 Store boxes. —*Reply to Mrs. D. Burrows, Dene House, Yarnells Hill, Oxford. Telephone Oxford 42098 (day), or Oxford 47091 (evening).*

THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION
(Founded by J. W. TUTT on 15th April 1890)

CONTENTS

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The Flight — ranges of insects

By H. S. Robinson, F.R.E.S.

It has been shown (Williams 1943) that a random catch of insects falls into a logarithmic series whose form is a function of the index of diversity of the area in which the catch is taken and it has been assumed (Williams 1943) that the catch of a light-trap produces a discrete random sample.

From this, it has been generally inferred that from a reasonably large sample catch it is possible to predict the statistical content of catches of different sizes taken at the same place within short periods of time.

Nightly catch of Insects.

Nights June	7/8	8/9	9/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21
H.lepida	63	4	138	11	123	36	56	106	30	36	6	4	16	14
T pronuba	3	.	4	6	12	.	.	368	5	20	.	1	.	5
A.monoglypha	18	1	10	4	40	3	5	182	12	35	.	2	7	2
A exclamationis	43	3	14	8	27	9	3	139	4	14	1	.	5	.
H.nana	8	1	31	11	68	12	3	91	30	33	.	2	6	10
P.gamma	.	2	10	.	8	2	1	167	7	1	.	.	.	.
H.conspersa	3	.	6	1	3	1	.	8	1	2	.	.	1	1
A.villica	8	1	4	1	3	1	1	2	.	.	.	.	.	.
A.lithoxylea	1	.	.	.	.	.	.	20	.	1	.	.	.	.
H.albimacula	2	.	1	.	3	.	.	10	1	1	.	.	.	.
I.lactearia	1	.	1	.	1	.	.	12	.	.	.	.	.	.
P.strigilis	.	.	.	.	.	.	.	11	.	.	.	.	.	.
C.umbratica	1	.	.	.	2	.	.	6	.	1	.	.	.	.
H.humuli	1	.	1	.	3	.	.	4	.	.	.	.	.	.
A.comma	1	.	.	.	1	.	.	4	.	2	.	.	.	.
A.ipsilon	.	.	.	.	.	.	.	7	.	.	.	.	.	.
S.ocellata	.	.	.	.	2	.	.	3	1	2	.	.	.	.
C.jacobaeae	.	.	5	.	.	.	.	1	1	.	.	.	.	.
D.porcellus	1	.	1	.	4	.	.	.	.	1	.	.	.	.
A.cinerea	2	.	3	.	1	.	.	1	.	.	.	.	.	.
P.meticulosa	.	.	.	.	.	.	.	6	.	.	.	.	.	.
A.sordens	1	.	2	1	.	.	.	1	.	.	.	.	.	.
S.urticae	.	.	.	.	.	.	.	5	.	.	.	.	.	.
C.ambigua	1	1	.	.	.	.	.	1	.	.	.	.	.	.
C.vinula	3	.	.	.	.	.	.	.	.	.	.	.	.	.
A.anceps	1	.	2	.	.	.	.	.	.	.	.	.	.	.
C.morpheus	.	.	.	.	.	.	.	2	.	1	.	.	.	.
S.irrorella	.	.	1	.	2	.	.	.	.	.	.	.	.	.
P.literosa	.	.	.	.	.	.	.	3	.	.	.	.	.	.
S.ligustri	.	.	.	.	.	.	.	3	.	.	.	.	.	.
H.cucubali	.	.	.	.	.	.	.	3	.	.	.	.	.	.
A.puta	2	.	.	.	.	.	.	.	.	.	.	.	.	.
A.c-nigrum	.	.	1	.	.	.	.	1	.	.	.	.	.	.
L.pallens	.	.	.	.	.	.	.	2	.	.	.	.	.	.
H.trifolii	.	.	.	.	.	.	.	2	.	.	.	.	.	.
M.stellatarum	.	.	.	.	.	.	.	2	.	.	.	.	.	.
D.oleracea	.	.	.	.	.	.	.	2	.	.	.	.	.	.
B.betularia	.	.	.	1	.	.	.	1	.	.	.	.	.	.
E.pulchellata	.	.	.	.	.	1	.	.	.	.	.	.	.	.
H.albicolon	.	.	.	.	.	.	.	1	.	.	.	.	.	.
M.trigrammica	.	.	1	.	.	.	.	.	.	.	.	.	.	.
A.megacephala	.	.	.	.	.	.	.	1	.	.	.	.	.	.
T.ocularis	.	.	.	.	.	.	.	1	.	.	.	.	.	.
A.stigmatica	.	.	.	.	.	.	.	1	.	.	.	.	.	.
P.chrysitis	.	.	.	.	.	.	.	1	.	.	.	.	.	.
N.ziczac	.	.	.	.	.	.	.	1	.	.	.	.	.	.
D.rubi	.	.	.	.	.	.	.	1	.	.	.	.	.	.
B.prasinana	.	.	.	.	.	.	.	1	.	.	.	.	.	.
P.bucephala	.	.	.	.	.	.	.	1	.	.	.	.	.	.
M.brassicae	.	.	.	.	.	.	.	1	.	.	.	.	.	.
D.elpenor	.	.	.	.	.	.	.	.	1	.	.	.	.	.
O.luteolata	.	.	.	.	.	.	.	.	1	.	.	.	.	.
D.fascelina	.	.	.	.	.	.	.	.	1	.	.	.	1	.
Number	164	13	235	44	303	65	69	1186	95	150	7	9	36	32
Species	13	7	19	9	17	8	6	44	14	14	2	4	6	5

Table 1.

It is the purpose of this paper to draw attention to certain limitations of this inference and, what is possibly more important, to indicate possible reasons for departures from expected catches and to suggest lines of enquiry which might usefully be pursued where such departures are found.

In June 1952 the author was enabled to spend a fortnight at Lydd-on-Sea and to operate, on each of 14 successive nights, a light-trap in an open shingle area, map-reference 51/085 199. A sketch of the area appears as text figure 1 and an analysis of macro-lepidoptera taken as Table 1.

TABLE 2

Period	Insects	Species	Index of diversity	Standard error
Nights other than 14-15 June	1217	33	6·3	6%
Nights of 14-15 June	1186	44	9·8	

Table 2 shows that, by a most fortunate chance, the number of insects taken on the night of June 14/15 is almost exactly equal to the total of insects taken on all other nights and that the night of this single large catch was fairly near the middle of the total period.

As both a single catch and any total of catches are random samples, any single catch which is equal in numbers to any total of catches in the same place on about the same dates should be a substantially identical logarithmic series.

Inspection of Table 2 shows, however, that in the catches under examination there is a startling statistical disparity, the index of diversity being 9·8 for the single catch but only 6·3 for the total. This difference is too large to be explained by the standard of error (6%) and an examination of the qualitative content of the catches indicates an interesting state of affairs.

As will be seen from Fig. 1 the trap was at the centre of a homogeneous shingle area and as long as random flight over the trap takes place by insects no further out than the fringe of this area, samples of substantially constant index of diversity will be taken. This is borne out by an analysis of individual catches on nights other than June 14/15.

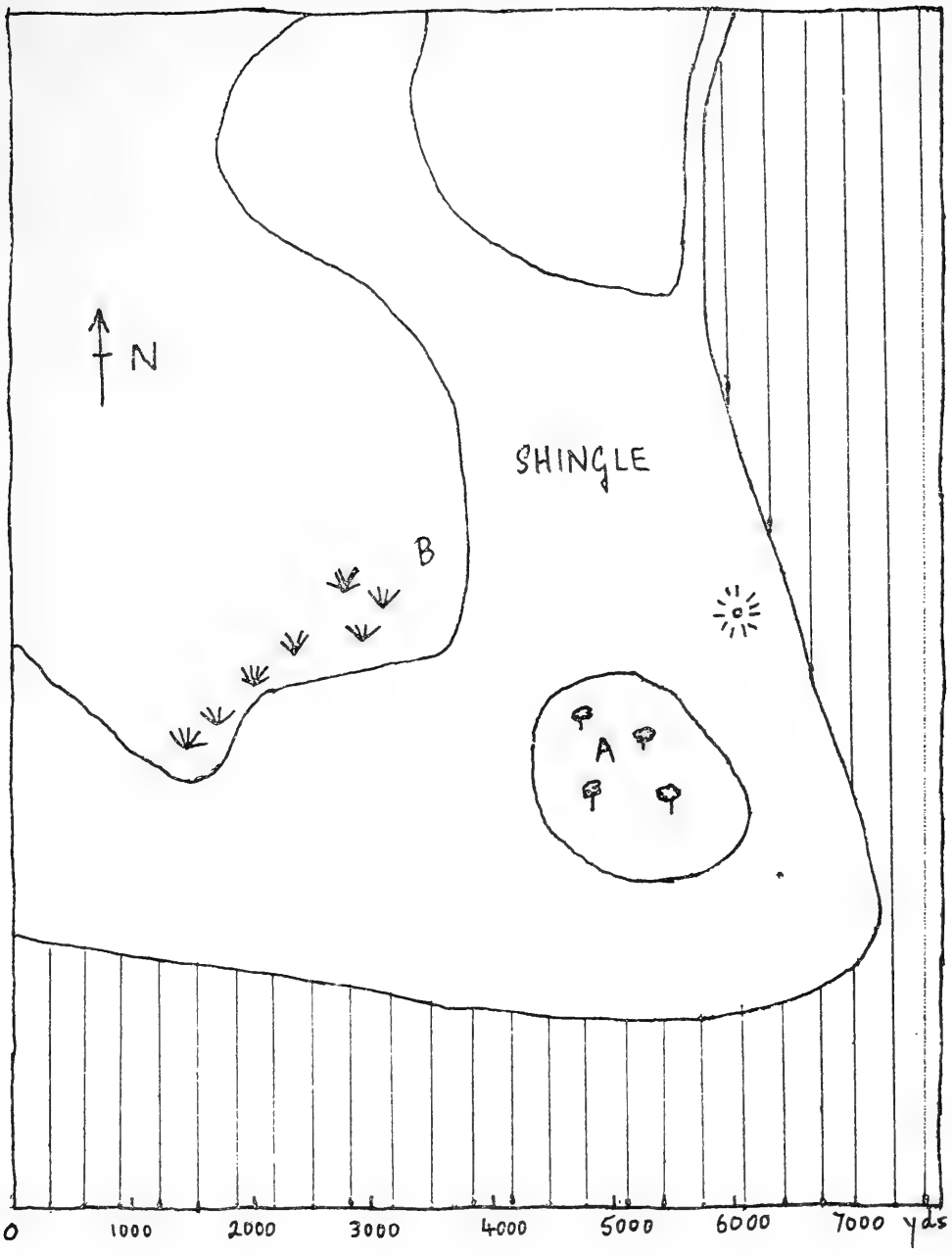
As soon, however, as the conditions are favourable for insect activity to produce flights from outside this area over the trap, insects from areas A and B (Fig. 1) which are not part of the homogeneous shingle area are brought in and, if these areas have a higher index of diversity than the inner area the index of diversity for a single catch will be abnormally high.

Thus, it may be considered that the trap is sampling an area which increases with an increase of insect activity and if that area includes two sub-areas of different indices of diversity, consistent results may not be obtainable.

It should be noted that there are, theoretically, three general possibilities:—

(a) A homogeneous area (e.g., rich mixed woodland) with a high index sufficient extent to provide that, even at the highest activity, no substantially different ecological area will provide insects to the sample.
(b) A homogenous area (e.g., sand or shingle) with a low index of

FIGURE 1



diversity within flight distance of areas with higher indices.

(c) A homogeneous area (e.g., rich mixed woodland) with a high index of diversity surrounded by an area with lower index (e.g., grassland).

In case (a) it can be expected that catches of all sizes will have approximately the same index of diversity. In case (b) catches of small size will have a constant index but there should be a critical size of catch beyond which the index will show a sharp rise. In case (c) there should be a sharp fall in the index beyond the critical size.

It will thus be seen that some caution must be exercised in interpreting the analyses of large sample catches made by light-traps and in relating

such analyses to the local ecology. If, however, it is possible to take samples of widely differing size, a comparison of the resulting indices of diversity will give valuable guidance as to the degree of ecological homogeneity of the area.

Additionally, it seems that it might be possible to obtain, from analyses of series of catches taken in heterogeneous areas, some estimate of the effect of insect activity factors on flight ranges, and it may be of value to indicate how this could be done.

For the purpose of ascertaining whether or not an area is homogeneous it is convenient, as stated above, to *consider* the area sampled by the trap as increasing with increasing insect activity. In fact, the range of the trap remains constant and the apparent increase of range is due to the entry into the effective trapping area of insects from outside. Thus, there is no evidence that the "foreign" insects taken are a random sample of those in the "foreign" area. They are a selective sample of those whose flight-ranges are increased to take in the trapping-range.

If we consider the Lydd-on-Sea area the catch of insects (e.g., *S. urticae*) from area A indicates that, at the level of activity obtaining on June 14/15, the flight-range of these particular insects was at least 1,000 yards from their breeding-ground, whereas, on other nights, their flight-range was less than this. There is no suggestion that all the insects native to A had their flight-ranges similarly increased.

An adequate series of catches should determine, with fair accuracy, the critical activity necessary to induce flights of this or any other range and it should, therefore, be possible by a sufficient series of experiments, to determine the relationship between activity and flight-range for a number of species.

So far, experiments by the author have been of insufficient number or magnitude to obtain any clear expression of this relationship but they have indicated (and it is put no higher than indication) that the speed and range of colonization by a species may be closely related to the activity factor which depends, in turn, of course, almost entirely on spontaneous meteorological conditions.

The suggestion put forward tentatively by the author, in the hope that others may test it, is that insects (other, possibly, than directional migrants) generally remain in the areas where they breed. They fly in and around these breeding areas and, as activity increases, these flights from their bases become longer. In normal meteorological conditions, however, they will always "return to base".

There will, however, occur occasional abnormal meteorological conditions which increase activity and therefore flight-range to such an extent that the "attraction" of the base becomes either so nebulous as to cease to direct the return of the insect within the time available, or another suitable ecological area exercises a stronger counter-attraction.

This will result in the insect becoming a vagrant in the first case or a colonizer in the second.

This theory would go some way to accounting for the observed fact that, though two apparently similar ecological areas may exist in comparative proximity, one may contain, for many years, an insect not found in the other. Then suddenly one colonization takes place on a fairly large scale and a normal population is rapidly built up. It may also explain the isolated appearance, on "good" nights of insects in a locality

apparently quite different and many miles from their usual habitat. This sporadic appearance of vagrants is well-known to all collectors and has always been a puzzle.

It should be pointed out that the author offers these suggested explanations tentatively, in the hope that critical observations may be made which may serve to confirm or destroy them. He would be glad to receive any reports of relevant observations of behaviour.

REFERENCES

(1)Williams, C. B., Fisher, R. A., and Corbet, A. S. (1943). *J. Anim. Ecol.*, **12**: 42-58.

The large Tortoiseshell Butterfly's Life-cycle

By E. P. Wiltshire, C.B.E., F.R.E.S.

I found Mr. Allan's recent article on *Nymphalis polychloros* L. (Vol. 79, Nos. 6-8) most interesting. It raised two questions about this fascinating butterfly:

1. whether it is fertilised before hibernation in this country;
2. whether it has two broods in the year, or only one.

The first of these was his article's main subject, and on this one can only agree with him that it could be solved one way or the other by dissecting females before and after hibernation but that as the species is now almost extinct in this country, this investigation must probably be left to someone in a part of Europe where it is commoner. Even there its habits make it less easy to investigate than Edland(1) appears to have found the Noctuid *E. transversa* of which he examined many females in order to answer a similar question about it.

On the second question, the number of broods in a year, Mr. Allan quoted Verity and various old authors to the effect that there are two in the South. I am writing this note principally in order to point out that Verity appears to have corrected his opinion towards the end of his life. In *Le Farfalle diurne d-Italia* **4**, 349, Verity states that an important biological character of the genus *Nymphalis* (to which he attributes two Italian species, *antiopa* and *polychloros*) is that it always has only one annual generation. Of *polychloros* in particular (id. p. 356) he says (my translation, slightly shortened):

"It is already known that there is only one annual generation, hatching in June-July; but the disappearance of the imagines shortly after eclosion, their spending the summer in an aestivating lethargy, and their reappearing during the whole autumn has led to the belief in two broods, at least in Southern Europe, which nearly all the authors mention as sure. Failla, indeed, observing three appearances in Sicily, attributed them to three generations. In Florence they disappear for the second time to hibernate

(1)Torgeir Edland, 1965-6: "Reproductivity of *Eupsilia transversa* (*Norsk. Ent. Tds.*, **13**: 4, 903). He summarised as follows:—"Of 30 or 40 ♀♀ trapped during autumn of 1963 and 1964, none contained any spermatophores, while 72 ♀♀ trapped in the spring contained as many as a mean 3·4 spermatophores. According to (various authors) each spermatophore may be assumed to represent one successful mating".

from December to the end of February and during this period I have never seen it as *V. atalanta* is seen. But from the 15th (February) they begin to show themselves as *atalanta* does, but more gregariously, because they usually form groups for the purpose of hibernation, attaching themselves to old trunks but preferring sheds, cellars and empty holes in general, and entering houses and settling on the ceilings and rafters. In the spring they quickly wear themselves out and die earlier than *atalanta* and *antiopa*, disappearing at the end of April".

Of *Inachis io* (id. pp. 359 and 361) Verity declares that it has a similar phenology, but not *Aglais urticae*.

It is remarkable that Verity gives details of the hibernation places but not of the aestivation places. I wonder whether modern and experienced Continental lepidopterists would agree with Verity's very definite statements quoted above.

Tutt's statement, which Mr. Allan quoted, is in contradiction with Verity's conclusions, for Tutt claims in one year to have bred two generations both of *io* and *polychloros*.

Perhaps one can explain this contradiction by regarding Tutt's breeding successes as exceptional, and Verity's conclusions as referring to the normal phenology. The mystery, however, could surely be decided by marking and releasing newly hatched midsummer *polychloros* (and *io*) adults and endeavouring to recapture the marked examples again and again over the ensuing months. I hope this article may encourage someone in a suitable country to make the experiments. For *io*, Britain would seem suitable.

Verity, *loc. cit.*, does not touch on the question of the time of mating and this was doubtless because he did not know the answer to Mr Allan's first question. In this connection, on p. 155 of his article, Mr. Allan asks why and how the *receptaculum seminis* evolved if not for the purpose of storing the spermatozoa "during a period unfavourable to fertilisation." The organ of course exists, as far as I know, in virtually all lepidoptera, irrespective of the period that elapses between impregnation and oviposition. According to the figures of Bourgogne[2] the organ is found in the primitive Monotrysians (Micropterygidae, Eriocraniidae), the intermediate Exoporians (some Hepialidae) and the more highly evolved Ditrysians (Nymphalidae and other families). One wonders, of course, whether the *receptacula seminis* of species with a short imaginal life are less developed than those of species whose oviposition is delayed or prolonged, for the latter would appear to require the regulating function of the organ more than the former. An example of a slightly delayed and considerably prolonged oviposition, without either aestivation or hibernation, is afforded by *Aricia allous* as observed by Hoegh Gulberg[3], who found that its bred females started ovipositing four days after impregnation and continued until death 53 days later. A third phenological category is that of the female migrants which start their migrations with undeveloped ovaries. If these are mated before the migration starts, the *receptaculum seminis* would seem to have more important work to do than if mating occurs on arrival at the breeding ground.

[2]J. Bourgogne, 1946. Un type nouveau d'appareil génital femelle chez les lépidopteres. (*Ann. Soc. Ent. de France*, CXV, 69-79.)

[3]Ove Hoegh Gulberg, 1966. North European groups of *Aricia allous* G.-Hbn. Their variability and relationship to *A. agestis* Schiff.

Mr, Allan's article, indeed, suggests that there are in all these cases numerous fields for research to be pursued both in the field and laboratory. While waiting hopefully for the results of such investigations, one would like to know if Verity's later conclusions about the life-cycle of *N. polychloros* and *I. io* are indeed accepted.

I have read Mr. Wiltshire's paper with much interest and shall be not a little pleased if it leads to research "both in the field and in the laboratory." It has seemed to me for a good many years that the subject of my article (fecundation before hibernation in the case of *N. polychloros* L.) is one of those matters upon which scientific research by trained laboratory workers is much overdue. I know of nobody at our universtities who is undertaking this work at present. It is to be hoped that Mr. Wiltshire's excellent paper will now stimulate some to undertake this task. Our field workers of course can do much to help in elucidating and interpreting bionomics — a sadly neglected branch of entomology.

One would like to see so many more papers in the *Record* devoted not merely to accounts of breeding moths and butterflies from egg to pupa but to the actual *habits* of the living insect in its larval, pupal and imaginal stages. Novel and unexpected traits in behaviour often occur when observing the habits of the living insect. Some years ago Mr. Wiltshire gave me two pupae of the spurge hawkmoth (*Deilephila* (*Celerio*) *euphorbiae* L.), and the behaviour of these very active pupae prior to eclosion displayed a quite unexpected and extremely interesting series of events, which were duly recorded in this magazine (Vol. 64 (February 1952), pp. 37-40).—P. B. M. ALLAN.

Three weeks in Cyprus, April-May 1796

By C. G. M. DE WORMS, M.A., Ph.D., F.R.E.S.

Cyprus had for a long time been on my programme for a spring visit and it seemed the obvious choice for 1967, since not only had the political situation so greatly improved, but it was one of the few places not too far disatnt which was in the sterling area and therefore did not come within the purview of the restricted travel allowance But as usual, though its lepidoptera had been very thoroughly studied over a long period by a good many eminent collectors, in particular by H. Rebel (1939, *Mitt. Münch. ent. Ges.*, **29**: 487), apparently the only account of collecting in recent years is by Mr R. F. Bretherton who spent a very profitable week in that island in 1954 (*Entomologist* **87**: 207). The end of April appeared to be the most propitious period for obtaining the earlier species of butterflies, but I had heard from Mr C. W. Mackworth Praed, who was in Cyprus at the beginning of that month, what a very late and almost record cold spring had been prevailing there.

I left London by air at midday on April 24 and after a brief stop at Athens we touched down as it was dusking at Nicosia airport where I picked up a new Vauxhall Viva which was to serve me very well. I

motored the 17 miles direct north to Kyrenia which was to be our headquarters for the whole of the stay. At the well-known Dome Hotel I was greeted by Mr and Mrs William Reid of Sheffield who had arrived by air the previous evening. We were extremely well looked after at this very good haven which has been run by the Catsellis family for many years.

My first sample of the local lepidoptera took place the following morning when I took a short walk in the vicinity of the hotel. On a piece of waste ground almost adjoining it I noticed a Copper at rest on a yellow daisy and at once recognised it as *Thersamona thersamon* Esp. of which several others were flitting about a peculiar low-growing plant with radiating bracts pointing upwards. As I at once suspected, this proved to be the foodplant of this species which we observed depositing on it. It was eventually identified in the Botanic Dept. of the Natural History Museum in London as *Polygonum bellardi.* As it turned out we never saw this Copper in any other locality but this restricted piece of ground bordering the small bay next to the Dome Hotel. *Colias croceus* Fourc. was comparatively numerous with an occasional fine example of *f. helice. Polyommatus icarus* Rott. was also seen that morning with a single example of *Gegenes pumilio* Hoffmannseg which is appreciably darker in ground colour than its near relative, *G. nostrodamus* Fab. It was to be flushed only from dry ground and paths, usually singly and was very hard to catch, as it always just jumped as one was about to strike with the net. *Pyrameis cardui* L. and *Heodes phlaeas* L. were about among the long grass on rough ground just west of the hotel that morning. The same afternoon Mr Reid and I ventured in our car up the Aghirda Pass on the main Nicosia road. This area had been the chief hunting ground of Mr R. Bretherton in 1954 and a very rich one it had proved to be. But no sooner had we stopped on some likely area a couple of miles up the pass than we were waylaid by a member of the Canadian United Nations contingent and told that no halting was allowed along the four-mile stretch of the pass, while photography was prohibited in the area. It was quite obvious that any collecting in this promising area was virtually out of the question, owing to the boundary between Greek and Turkish habitations, though later that day we ventured to the ancient Hilarion Castle, perched 2000 ft. up on a rock summit. We were accompanied by a very pleasant Turkish officer who told us we could collect in that vicinity, which we did not, however, revisit.

So it meant casting our nets further afield which was less convenient, On the morning of April 26 I motored west via Lapithos, fifteen miles along the coast, to the short pass near Panagra, where the long 40-mile route to Nicosia crosses the coastal mountain chain. The weather was once more ideal with the thermometer well in the 70's. It was in this region of fir and short scrub interspersed with three species of Cistus, all in full bloom, that I had my first introduction to that delightful little endemic Blue, *Glaucopsyche paphos* Turner which flits round bushes much like *Plebeius argus* Rott., but in appearance and general habits it approximates much more to *G. alexis* Poda (*cyllarus* Rott.) than to *G. melanops* Bdv. The ground it always seemed to affect was covered with what is locally known as the "Wire Netting" shrub where it is interspersed with the prickly broom (*Genista sphacelata*) which may well be its foodplant, since this little butterfly seems always to be fluttering

round it. In this locality, too, I saw the first of the endemic Meadow Brown which the late Major P. P. Graves gave specific rank under the name of *Maniola cypricola* (1928 *Entomologist* **61**: 5). The large black brand in the male is much more prominent than in *M. jurtina* L. But the numbers of butterflies at this period was distinctly meagre judging by the general paucity in this region under such ideal conditions. On the 28th we motored eastwards along the tortuous coastal road, halting at a number of likely-looking spots to see what they produced, but again only such insects as *Polyommatus icarus* Rott. were numerous, though we saw the first *Pontia daplidice* L. and the special local form of *Gonepteryx cleopatra* ssp. *taurica* Stdgr. Bird life was especially interesting, as we saw a number of that delightful little indigenous bird, the Cyprus Chat (*Oenanthe leucomelas*) related to the Wheatears. The highlight of the plant life in this area was the large wild cyclamen (*C. persicum*) growing in crevices of rocks. The last day of April, again in great heat, we worked the coastal ground west of Kyrenia which provided the first *Papilio machaon* L. and many *Euchloe ausonia* Hbn. with several *Colias croceus* Fourc. *M. cyrpicola* was now getting much more numerous. On the opening day of May I was once more in the Panagra pass where *G, paphos* was also becoming commoner, while the dry bed of a stream was a good hunting ground for *G. pumilio.*

On May 2 I set out early and motored via the outskirts of Nicosia to the south coast at Limassol where I stayed with Squadron-Leader P. Saundby, son of the Air Marshal. That afternoon he kindly motored me to the large lagoon south of the town, but the flamingoes had just migrated. However, we saw a number of Egrets and White-winged Black Terns. The next morning I motored over the very striking mountain road towards the Troodos massif. Halting a few miles inland I noticed a *G. paphos* flying along the road bank. On penetrating further up a rough path I found this little Blue in comparative abundance all over the local slopes with quite a proportion of females flitting around the prickly broom. They were mostly in very good order. I then went on over a very winding road to Platres, the well-known mountain resort, where I had lunch and then proceded over a still more tortuous and narrow road through the fir forest till I reached the summit of the range at Mt. Olympus at 6400 ft. with snow still in some quantity at this altitude. But the heavens opened so that I was not able fully to appreciate the grandeur of this region nor its exceptional flora. I made my way back to Kyrenia that evening covering the 65 miles from Troodos via Morphou.

The next few days Mr Reid and I explored further coastal spots just west of our base. The most productive proved to be a small cove only half a mile from our hotel where there was some very rough ground covered with small bushes and the usual scrub. Here I was surprised to find a few *G. paphos* and also some worn *Philotes vicrama* Moore. We also saw the first *Thymelicus actaeon* Rott, in a very large and bright form on the 6th. *G. cleopatra* was fairly plentiful with both hibernated and freshly emerged specimens flying together. The Reids left for England early on May 7. The next day in the Panagra Pass area I spotted a small dark butterfly flying around some broom and was lucky enough to catch it. It proved to be *Ypthima asterope* Klug. which, as Mr Bretherton noted, is not only very difficult to follow, but it also dived at once into the very thickest herbage. *Lampides boeticus* was also on

the wing that day in that locality. On the 9th I once more motored westwards along the narrow coastal road for some 30 miles and then turned inland through the very attractive and well-wooded Lefkoniko Pass. At the top I again turned to the west and negotiated the 14 miles of very rough mountain road at about 2000 ft. with grand scenery and large slopes covered with bushes of *Arbutus unedo,* surely the main home of *Charaxes jasius* L. At this level, too, *G. paphos* was flying fairly commonly. I then went on to the very attractive old castle at Kantara. Returning southwards to a point where there is a splendid view of the 50-mile long 'pan-handle' of the island's most easterly point, I happened to stop by a rocky and steep slope. Here I was pleased to find the local Grayling flying in plenty. This insect has been designated by Professor de Lattin as belonging to *Hipparchia pellucida* Frhst. As usual, they were far from easy to catch, while some were already past their best. After a short stop in Famagusta I returned to Kyrenia along the 40-mile straight highway to Nicosia where I was held up at several check points. After a further visit on the 10th to Panagra, I made another journey on the 11th to the spot where *H. pellucida* was flying in large numbers. My last three days in Cyprus were spent at Panagra and also working the cove near our hotel where *T. actaeon* was now becoming very plentiful, but the females had not appeared before I left for home early on May 15, after what had been a most enjoyable sojourn under ideal weather conditions. The chief disappointment was that the bigger Satyrids such as *Pararge roxelana* Cramer, *Hipparchia syriaca* Stdgr and *Charaza briseis* L. had not yet emerged in this late season and above all that the Aghirda Pass area was out of bounds. I was also apparently just too late for the Eastern Festoon butterfly, *Zerynthia cerisyi* Bdv.

The moth population seemed very lean both by day and night and there was virtually nothing round the local lamps except *Caradrina ambigua* one night. *Oria musculosa* L. was flying by day at Panagra in early May. I took a single example of a Forester at Kyrenia.

The following is a summary of 22 species of butterflies observed between April 25 and May 14.

Papilio machaon L. Only a few seen in the immediate vicinity of Kyrenia.

Anthocharis cardamines L. Only one male noted at Panagra on April 27.

Euchloe ausonia Hbn. Numerous mainly in the coastal belt near Kyrenia. Some small specimens may have been from the late first brood.

Pontia daplidice L. Few observed flying with the previous species by the coast.

Pieris brassicae L. Not very numerous, but a very large and well-marked form.

Pieris rapae L. This insect was becoming increasingly plentiful everywhere.

Colias croceus Fourc. Very numerous in most areas with several female f. *helice.*

Gonepteryx cleopatra L. Both fresh and hibernated males of ssp. *taurica* flying in some quantity just to the west of Kyrenia.

Pyrameis cardui L. Fairly common by the coast.

Pararge maera L. One or two seen among rocks on the coast.
Hipparchia pellucida Frhst. Only taken a few miles south of Kantara on a rocky eminence.
Maniola cypricola Graves. Becoming commoner every day in all areas.
Ypthima asterope Klug. Only a few seen near Panagra as from May 8.
Thersamonia thersamon Esp. Only observed flying on a small area of ground near the Dome Hotel where *Polygonum bellardi* was growing.
Heodes phloeas L. Few taken near Kyrenia.
Lampides boeticus L. Few seen at Panagra from May 3.
Philotes vicrama Moore. Only two worn specimens taken just west of Kyrenia.
Glaucopsyche paphos Turner. Observed in several areas, in the immediate neighbourhood of Kyrenia, also near Panagra and Kantara as well as on the southern slopes of the Troodos Mountains.
Polyommatus icarus Rott. Fairly plentiful over a wide region.
Carcharodus alceae Esp. Only noted just outside Kyrenia.
Thymelicus actaeon Rott. Becoming very common along the coast. First seen on May 6.
Gegenes pumilio Hoffmanseg. Very sporadic and always on bare ground Seen mainly in valley just west of Kyrenia and at Panagra.

Three Oaks, Woking. 15.viii.67.

Some interesting Lepidoptera recorded for Leicestershire, Oxfordshire and Cambridge

By S. R. Davey, B.A. (Cantab.)

During the past five years, I have been collecting and recording lepidoptera from Leicestershire, Oxfordshire and, for three undergraduate years, from Cambridge, and have made a number of interesting recordings. Over the last two years I have been able to run an m.v. trap and, consequently, the number of records from these areas has increased. The m.v. trap was operated in the North Oxfordshire village of Bloxham where I taught Biology for two years; it ran during June and July in 1966 and from the latter half of May until the end of July this year. Unlike many fellow lepidopterists, I find that this year, particularly the first half, has been one of the best years yet.

The majority of my Leicestershire records are from Barrow-on-Soar in North Leicestershire. Barrow is situated in the valley of the river Soar and is some two miles from the boundary of Charwood Forest, an area of considerable entomological interest. Barrow stands on limestone and the site of the trap is about half a mile from the river. Associated with the river, there is some good marshy ground which means that the trap is visited by such species as *Nonagria typhae* and *Arenostola pygmina*. Species more typical of Charnwood Forest do fly over, and this is borne out by the occurrence of *Lycophotia varia* whose foodplant grows sparsely in Buddon Wood which is two miles away; but only in abundance at Charnwood Lodge some ten miles away. The Barrow trap is also visited by *Bupalis pinaria* which could only have come from the Charnwood Forest Woodlands.

P. Gamble, Esq., runs an m.v. trap in Quorn, about two miles nearer Charnwood Forest than Barrow and his records differ considerably from the Barrow ones. The site of his trap is in a garden which borders onto Buddon Wood, a typical piece of Charnwood Forest Woodland. Some of his more noteworthy captures are as follows:—

Harpyia bifida. Three this year, two early ones and one later one. Although *H. furcula* occurs in Barrow, *H. bifida* has so far failed to visit us. Similarly, *H. furcula* has so far been absent from Quorn.

Chaonia ruficornis. Occurs in ones and twos at Quorn but not so far at Barrow.

Orthosia munda. A very common insect at Quorn, but not from Barrow so far.

Deilephila porcellus. Only an occasional visitor to Quorn. It is either attracted by the rhododendrons in Buddon Wood or the Honeysuckle in Mr Gamble's garden. Absent from Barrow so far.

Plusia festuca. Mr Gamble has taken this very attractive moth three times, but so far it has failed to visit Barrow.

Cornibaena pustulata. A common insect at Quorn, but not from Barrow.

Pseudodiops prasinana. A not infrequent visitor at Quorn due probably to the oaks in Buddon Wood. I have only seen this handsome insect once in Leicestershire myself, in a quarry in Mountsorrel.

The more noteworthy records from Barrow on Soar I list below, some of which, according to a list compiled by the late Herbert Buckler in 1954 are new for Leicestershire.

Rhyacia simulans. Has been recorded twice, one in August 1966 and once during the same month this year.

Spaelotis ravida. A not infrequent visitor. The Barrow specimens are variable in the extent of the reddish tinge on the costal margin. Some have this feature entirely missing.

Tiliacea citrago. A species not listed by Buckler. Has occurred in Barrow once. Also from Quorn.

Tiliacea aurago. A frequent species occurring most nights during its season.

Cirrhia gilvago. Two have occurred in Barrow, both in 1966.

Apatele leporina. Not on Buckler's list. Has occurred twice this year, once in July and again in August.

Apatele alni. Three in 1966.

Apamea ophiogramma. One in August 1966. The nearest locality for this species I can find in reference books is Northamptonshire.

Brachionycha sphinx. Two in October 1966. Buckler gives the East of the county, then local.

Celaena leucostigma. Two in 1966. An insect associated with marshy ground. Not recorded for North Leicestershire by Buckler.

Gortyma flavago. A species which I believe is infrequent in most localities, however it has been recorded regularly through September in 1966, sometimes as many as fifteen in one night.

Cosmia diffinis. A single record from Barrow this year. I have also seen this insect in Uppingham (1), and at Bedford Purlieus (4), in Northamptonshire. Not on Buckler's List.

Lithosia deplana. A single, uniformly dark specimen with a faint yellow costal margin. Recorded in September 1966. This species is not on Buckler's List.

Perizoma taeniata. A single specimen in 1966. Again, not on Buckler's List.

Lobophora halterata. A single specimen this year.

Ellopia fasciaria. Several most years. Not recorded as occurring in this part of Leicestershire by Buckler.

Erannis leucophaearia. Two only. One in March 1963 and the other in January 1966.

Zeuzera pyrina. A fairly common insect in Barrow. Although attracted by m.v. light, it never seems to enter the trap, but sits on the grass nearby.

Eremobia ochroleuca. A single record this year.

Cucullia gnaphalii. A single record last year.

Philereme transversata. Recorded as rare in East Leicestershire by Buckler. Has occurred fairly frequently in Barrow.

Other unusual Leicestershire records are as follows:—

Cucullia absinthii. A single specimen to a home made, non m.v. trap in Leicester. June 1962.

Xylena exsoleta. A single specimen to sugar in a quarry near Mountsorrel.

Hermina barbalis. A single specimen to light in Lea Wood, Charnwood Forest. August 1966.

Leucoma salicis. A single specimen again from Lea Wood in August 1966.

Procris statices. Three on a railway embankment at Husband's Bosworth in July 1962.

Xanthorhoë quadrifasciata. A single record, again from Husband's Bosworth in June 1962.

My second m.v. trap site was at Bloxham in North Oxfordshire. The village is situated on the road between Banbury and Chipping Norton and is set in typical agricultural countryside. There is virtually no woodland and trees are rather sparse. There is a certain amount of pastureland nearby, but it is closely grazed by cattle. The typical Cotswold Woodlands are a long way away from Bloxham and it does not strike one immediately as a locality which would have a rich lepidoptera fauna, however, the list of species I have compiled for Bloxham is far from meagre and I list the more unusual ones below:—

Deilephila porcellus. One very fine specimen in July this year.

Harpyia bifida. A single rather large specimen with remarkably dark bands. Recorded in June this year.

Harpyia furcula. Three rather small specimens, all this year.

Polia nitens. Although not usually a common insect, it seems very frequent in Bloxham.

Hadena conspersa. Three of these predominantly coastal moths have visited the trap this year.

Hadena lepida. Three this year, one which is a very pale yellow.

Orthosia advena. Two, both recorded this year.

Cucullia gnaphalii. One this year.

Brachionycha sphinx. Not taken at m.v. light, however, I have seen several high up on lamp posts in the village.

Antitype flavicincta. One specimen of this handsome moth flew into a friend's room while we were drinking coffee one evening. He is a non-lepidopterist and was most puzzled by my excitement.

Apatele leporina. Three records, one of which was particularly large.

Apatele alni Several this year, but none in 1966.
Pyrrhia umbra. One specimen caught while flying around the trap. Taken this year.
Lygephila pastinum. A single rather remarkable record in July this year.
Lithosia complana. One record this year.
Cornibaena pustulata. Recorded this year, one only.
Lygris prunata. One rather poor specimen, again recorded this year.
Bapta bimaculata. I have dislodged several from the hedgerows around Bloxham.
Zeuzera pyrina. A fairly common moth in Bloxham.

While I was living in Bloxham, one of the pupils at the school brought a specimen of *Euphydryas aurinia* to show me. He had just returned from shooting practice on Otmoor Range. Since I had never seen this species, I obtained permission to visit the range and went over there at the next possible opportunity. Soon after I arrived I caught sight of the insect and I was soon aware that the area was extremely well colonised, a truly remarkable sight. The Otmoor Range consists of six large fields and they all contain *E. aurinia* in large numbers.

Finally, while I was at Cambridge between 1961 and 1964, although I did not have time to do much collecting, I did see the following species which I thought worth mentioning.
Xanthorhoë quadrifasciata. A single record in June 1962.
Hadena compta. Visited my rooms late one evening in June 1962.
Cucullinia lychnitis. One very fine specimen found at rest on a wooden fence. May 1964.
Oporinia christyi. A single rather battered specimen. October 1961.

I also discovered a small colony of *Thymelicus lineola* in a field between Cambridge and the village of Coton.

Barrow-on-Soar, Leics. 5th September 1967.

Since writing my paper, the mercury vapour light trap at Barrow-on-Soar has been visited by *Heliothis armigera* Hübn. on the 29th September. *Plusia festucae* L. has also visited the trap.

Barrow-on-Soar, Leics. 8th October 1967.

The History of the International Commission of Animal Nomenclature and its Fate

By Frank Balfour Browne

Names were invented for animals and plants so that we could communicate with one another concerning the different kinds. This collection of names, to be of general use, had to be in some language so that people in different parts of the world could understand one another, and therefore among the early rules was one by which Latin became the basic language, and this was followed later by a rule requiring a gender relationship between the name of the genus and the species. Another early rule, based upon common sense, was that of priority by which if two names had been given to the same object, the first name was to be the correct one. Another rule required the author's name to be added to that of the genus or species.

These rules, and some others, were the foundation of the subject of

animal and botanical nomenclature, and it was when systematics became a popular game in which anyone could join that the botanists wisely broke away from the zoologists and pursued their own less difficult course. This popularity of the game started in America where the players became 'systematists', and as the game was taken up by other nations the body ultimately swelled into "The International Commission on Zoological nomenclature", but, curiously enough, this Code was first published in French!

By the 1930s we had got a set of rules called 'Articles', but by that time so many suggestions had come in that the meaning of the rules was becoming obscure, and to many of them were added what were called 'opinions' which, in many cases, were with the object of explaining what the rules meant, and confusion began to mount up. Thus, in 1935, the preface to the first edition of Procedure in Taxonomy (Schrank & McMasters) states that "the opinions and suggestions set out in this paper represent, for the most part, the opinions of the majority of the members". From about 1935 to 1961, annual meetings had so added to the rules that, in the latter year, the number had risen from 36 to 87 which, with the opinions added to most of them, occupied 91 pages of an octavo volume while an addition of 85 pages was required for further recommendations and glossaries.

And this volume has killed most of the interest that had built up in the game so that, although supported by a few of the more garrulous, it has been rejected by the majority who base their own rules on the common sense which began with the adoption of names for animals.

I am offering this note to an entomological journal because entomology, with the vast number and variety of insects, is the main basis upon which all this complexity of rules and their interpretations has been built, and were it not for this fact I doubt if most of the confusion which has evolved would have been published.

30th August 1967.

The Asturias and Albarracin: June-July 1967

By Major General Sir George Johnson, K.C.V.O., C.B., C.B.E., D.S.O.

Inspired by Dr. de Worms's visit to Spain in June and July 1966, I decided on a similar tour this year. An important factor was that the small travel allowance goes further in Spain than elsewhere.

My experiences were similar to those of Dr. de Worms, but there were differences which may be of interest to others visiting the same areas.

My wife and I arrived with our car at Biarritz on the morning of 27th June via the Lydd air ferry and rail-car-sleeper service Boulogne-Biarritz. The advantage of this method of approach was that both outward and return journeys are payable in sterling and one sets out from Biarrtiz with one's travel allowance intact.

Our first objective was *Erebia palarica* Chapman in the Asturias. We had intended to stay at Riano in Leon, but owing to a somewhat Spanish muddle, this fell through and we stayed instead at Llanes on the Biscay coast. This was about 56 miles from the nearest collecting grounds for *palarica* on the Puerto San Glorio and Puerto del Ponton, the two passes

to the east and west of the Picos d'Europa. Roads to both these passes ran through spectacular gorges but were winding and slow, climbing in one case to 5000 feet and in the other to 4000 feet. We found it quite a long day getting there and back to either.

Our first night we spent at a good modern hotel in Laredo, a few miles west of Bilbao. Next day, 28th June, we motored to the top of the San Glorio pass and collected there before descending to Llanes. A short distance below the summit on the north side of the pass, we found *palarica* flying in fair numbers beside the road. Females were scarce, but we took a fair number males in good condition though some were worn. A few very worn *E. triarius* de Pr. and some *Glaucopsyche melanops* Bdv., also past their best, were in the same area.

On 29th June we climbed to the Puerto del Ponton, where again we found *palarica* among the broom, particularly along a by road on the south side of the pass. They were less numerous than on the San Glorio. Worn *triarius* were again present. On the way down we stopped at a footbridge over the gin-clear River Dobraand and could see a number of salmon lying below it. Though one has heard of Spanish salmon rivers, it was most interesting to see one.

Next day we investigated the local coastal butterflies. On a heathy ridge east of Llanes *Hipparchia alcyone* D. & S. was flying with innumerable *Plebejus argus* L. *Lampides boeticus* L. was quite numerous round some gorse bushes and there were a few worn *Pararge maera* L. Below the ridge were a few *Papilio machaon* L., *Euphydryas aurinia* Rott, *Heodes tityrus* Poda together with numerous *Melanargia galathea* L.

On 1st July we set off for Burgos, retracing our way along the coast to Torrelavega, where we turned south and soon after crossed a low pass, the Puerto del Escudo, where a few fresh *Erebia meolans* de Pr. were flying at 3000 feet. At Burgos, after being refused admittance at the two principal hotels in the town, we found one a few kilometres out on the Vitoria road, situated in a delightful rose garden.

Next day we went on to Soria. Seeing butterflies by the roadside some 32 kilometres west of Soria and just short of the tiny village of Abejar, we stopped and found it to be a good locality on the edge of a pine forest. An area between the road and a single track railway line to the south of it was humming with butterflies. The marbled whites *M. russiae* Esp. and *M. lachesis* Hb. were in profusion, as were *Coenonympha iphioides* Stgr., *Melicta parthenoides* Kef., *Pyrgus carthami* Hb. and *Adopoea lineola* Ochs. *Brenthis hecate* Schiff., very fresh, was common and seemed particularly attached to the juniper bushes up and down which it flew without settling. Other butterflies included *Melitaea phoebe* Schiff., *B. ino* Rott., *Aricia cramera* Esch. and *A. ramburi* Vty. This part of Spain is very barren and butterflies few and far between. We were lucky to strike such a rich pocket.

On arrival at Soria we found a bullfight and fiesta was on, but luckily we had reserved a room at the best (not very good) hotel. Some of the bull-fighters were staying at the same hotel and the entrance was crowded with their fans. That night the whole town was parading in the streets; singing and band-playing did not stop until daylight next day. However, we got some sleep, and although breakfast was understandably late, we got away in reasonable time on our last lap to Albarracin.

En route we stopped at a locality recommended by Dr. de Worms, just north of Medinacelli and 35 miles south of Soria. Here the road climbs a low ridge covered with bushes of an evergreen scrub oak. Many marbled whites were flying here and beside *M. russiae* and *M. lachesis*, we found a number of *M. psyche* Hb., the males rather worn, but the females still in good condition. *Pyronus bathsheba* F. was very abundant, and we took a single fresh specimen of *Lysandra hispana* H.-S.

That afternoon we arrived at Albarracin, where the hotel at which we had booked a room early in the year, informed us that they were full up and had refused our bookings. However, we made them turn up their file and found that the refusal was to someone not of our name and moreover the first letter in the file was their own copy of their letter confirming our reservations! After this they climbed down and offered us a choice of a room with twin beds and a shower or one with a double bed and bathroom. We were forced to take the former, and as there was never hot water and the plumbing was poor, we were not too comfortable. The interesting thing was that in spite of their statement that they were full up. there seemed to be no one else in the hotel except one French family, also after butterflies! Very curious!

The small town, still mediaeval in appearance, was fascinating, most of the streets being only wide enough for a pack mule. The Teruel road passes under the town through a tunnel, the town itself being situated on a ridge with precipitous slopes on both sides and ancient castellated walls at each end.

The next nine days were spent mostly on the slopes at the edge of the pine forest at Moscardon or in clearings in the forest in the Sierra Alta on the roads to Orihuela or Bronchales. We spent some time searching for *L. nivescens* Kefer but only found one in a locality recommended by Dr. de Worms in the Sierra Alta, and one other of a larger form with a dark margin to fore and hindwings at the Moscardon end of the forest, at least 1000 feet lower down. In the first locality in a clearing beside the Orihuela road my wife put up a large wild boar for which she felt inadequately equipped with a butterfly net.

Near Moscardon we found most of the butterflies noted by Dr. de Worms, with the addition of *Agrodiaetus damon* Schiff. and *A. fabressci* Obth. but with the exception of *M. dejone G.-H.* and *L. coelestissima* Vty. for which this year perhaps we were too early. *L. arragonensis* Gerh. was not uncommon in certain places by the time we left, both on slopes of fir forest and on the edge of cultivated patches towards Moscardon, where it, with hosts of other butterflies, favoured a weed of the labiate family, with small white flowers and a mint-like growth. *L. caerulescens* Tutt, halfway in appearance between *arragonensis* and *coelestissima* was flying with *arragonensis* sparingly.

Towards the end of our stay we several times tried the Albarracin-Teruel road and about 2 miles from Albarracin, where the road crosses a dry watercourse, we found a number of butterflies and took a good series of both *Chazera prieuri* Piew. and *Satyrus actaea* Esp. *L. arragonensis* was also present here and we found *Sloperia proto* Ochs. not uncommon.

On 13th July we left Albarracin and after driving 165 miles through very barren and desert-like country, put up at a first-class modern hotel in Huesca, a welcome change after the lack of baths and inedible roast fighting bull (apparently?) of Albarracin.

Next day we crossed the Pyrenees to Oloron, taking a few *Laeospis roboris* Esp. in fair condition on heads of Danewort just north of Jaca on the way.

The sun disappeared behind the clouds for the first time in three weeks as we crossed the French frontier. So ended an interesting trip which owed much of its success to advice from Lt. Col. Manley and Dr. de Worms.

18.viii.1967.

Notes on the Microlepidoptera

By H. C. Huggins, F.R.E.S.

Crambus selasellus Hübn. ab. brunnea **Huggins.** In my description of this insect (*Ent. Rec.*, **79**: 100) I expressed the opinion that it might probably be a local subspecies.

I regret to say that this is not the case. Mr. E. S. A. Baynes joined me at Dingle for a week on July 23, and we were successful in finding a good locality for the moth in a brackish marsh about five miles from the town. We took seven and saw two or three more (it was not easy to catch as a strong wind was blowing on each of the two days we visited the place) and they differ very little from my English ones. There is a streak above the central white mark that is a little darker than usual, but not much so.

In addition, early in August, I took another specimen in my trap at Dingle, in which I took the ab. *brunnea* last year, which was also typical, so *brunnea* is undoubtedly simply a rare aberration.

Crambus pratellus L. Last year I caught a very small dark specimen of this moth in the Connor Pass above Dingle, some 1700 feet above sea level. It was a male, only two-thirds the usual size and very dark in colour. I could find no others, and as there was a strong wind blowing from the higher slopes leading to Mount Brandon, I formed the opinion that it had come from these slopes.

On June 15, I was lucky enough to get a lift to the Connor and climbed up these slopes; at about 2,500 level I found a fair number of *pratellus*. They were all of this diminutive race, and all the males dark like my first one; the females were the usual whitish insect. This small race is rather interesting, as it was accompanied by specimens of *Olethreutes schulziana* Fab., which were rather larger than those on the low ground, and more brilliant in colour.

CORRECTION

I regret that, owing to lack of information, I mentioned in the September issue (antea: 238) that the **Annual Exhibition** of the **South London Entomological and Natural History Society** would take place at Burlington House, Piccadilly, on 28th October. This exhibition will not be at Burlington House this year, owing to the removal of the Royal Society to other premises, but by kind permission of the Director of the British Museum (Natural History) the Exhibition will be held in **The Conversazione Room at the British Museum (Natural History), Cromwell Road, London, S.W.7.**

The date remains unaltered, and the exhibition is open for the receipt of exhibits from 11 a.m. until 2 p.m., and closes at 4.45 p.m.

Parking space is usually available in Queen's Gate (centre and sides).

—Ed.

A Review of the Status of certain Scarabaeoidea (Col.) in the British Fauna; with the addition to our list of *Onthophagus similis* Scriba

By A. A. Allen, B.Sc., A.R.C.S.

(*continued from p. 224*)

A. scrofa (which as Fowler remarks is one of the most distinct among our species and unlikely to be mistaken, though being very small it may sometimes be overlooked) was first recorded by Stephens (1830: 207; 1839: 165) as having occurred in dung at Pentire Point, North Cornwall; and as he gives the period April to August—always supposing that such indications are not just copied from foreign works, which however is by no means certain—it would seem that a number were taken, or the occurrence spread over some years; at all events more than one specimen. The coincidence of the locality with one of the two given by the same author for *Pleurophorus caesus* (*q.v.*) is noteworthy. The only other record of *A. scrofa* in our literature appears to be that of an example captured at Southport, Lancs., by J. Sidebotham, in 1865, and vouched for by Dr. D. Sharp (1868); no details of the circumstances are given, but it probably occurred on the well-known sandhills in that locality—the one-time haunt of so many rarities. The additional record referred to above is for Scotland, and is furnished by a specimen in the Power collection bearing a printed label 'Ex coll. Dunsmore' and with 'Dunsmore' Paisley' written beneath the card in G. C. Champion's hand, from whose collection the insect appears to have been derived.

It will be noticed that the species has only been taken on, or not far from, the west coast—never on the east or south coast. This makes chance immigration unlikely; but, of course, importation *via* cattle-boats cannot be ruled out. On the other hand the facts may reflect a natural habitat preference or coastal tendency such as is found in some other British Aphodii, while the apparent distribution indicated recalls that of *Pleurophorus* and *Rhyssemus* (next to be considered). In none of the three does the Continental range, which is tolerably wide, throw any direct light on the question; nor are they particularly maritime insects abroad, where the present species is said to favour dry sandy districts. Specialization in such respects is, however, very frequent in our insular fauna and is altogether consistent with the idea of ancient (pre-glacial?) relicts approaching extinction.

Pleurophorus caesus Crtz.—This and the following species are very similar as regards their standing in the British fauna, which is decidedly obscure; though the evidence appears a little less meagre in the case of the present one. Both, however—hitherto very largely dependent on old and unconfirmed reports by Stephens—now recieve some small degree of corroboration through solitary records to which I would draw attention, and for which, again, I am obliged to Mr Johnson.

'Stephen's note (1830: 211) on *P. caesus* is as follows: 'A rare species, at least towards the eastern parts of Britain; in the western it appears to be more abundant. "Near Bristol and Pentire Point, Cornwall", Dr. Leach'. In the 'Manual' (1839: 165) he adds 'sandy places', while Fowler (p. 38) gives 'Under stones and on the wing' for the circumstances of capture. Specimens possibly from one or other of the above sources are extant in some old collections.

The next record—none too well-known, being omitted (accidently, it seems) from Fowler & Donisthorpe (1913)—is from Tresco, Scilly Isles, by C. W. Dale (1896: 41). K. G. Blair (1931: 1212) comments on this as follows: '. . . the claim of *Pleurophorus caesus* to rank as a British species rests upon a single capture by C. W. Dale in the Scilly Islands; this individual was most likely introduced with foreign plants into Tresco'. Blair is, however, mistaken here on two counts. In the first place, he has overlooked the Stephensian record—in this instance by no means to be ignored, for its emphasis upon south-west England and particularly the Cornish locality fits in well with the occurrence in the Scillies. And in the second, it is not a question of a single individual, for Dale's note (*l.c.*) reads: 'I took two or three specimens of this species [*Psammobius caesus*] on Tresco . . . in October, 1890. Mr. J. J. Walker named the insect for me. Had I known it was a rarity I might have hunted for more'. (G. C. Champion, in a footnote, confirmed the species' identity.) Walker (1932: 72) mentions having in 1897 received a specimen from C. W. Dale, 'one of several which he assured me were taken on St. Mary's, Scilly' and which is now in the Champion collection;[11] and also that the Dale collection contains three pinned and two carded examples. The latter must, almost certainly, have been Scilly specimens added by the younger Dale, whilst the pinned ones were old examples obtained by his father. It can hardly be doubted that at least three individuals occurred, and not just one as Blair thought; and that *P. caesus* must have been breeding on Tresco at the time—though whether a native of the island or originally an importation it is impossible to say. The failure of the few later visiting collectors to find the species is inconclusive, merely suggesting (but certainly not proving) that it may have died out there; or the visits may have been at the wrong time of year.

Finally there is an earlier but only recently published record: Southport, Lancs., J. Sidebotham, about 1865 (Johnson, 1962: 155)—based on a single specimen. It is very curious that both this species and *Aphodius scrofa* should have been found not only at Southport but also in the same Cornish locality (*vide supra*).

Thus, a rather better case may be made out for *P. caesus* as British than has generally been allowed. The records give the impression of a species which spread up the west coast in early times from its headquarters in the extreme south-west, later dying out except, perhaps, in a very few places. Its distribution abroad is partly Atlantic and includes North Africa and the Canary Islands—I have myself taken it on Teneriffe.

Rhyssemus germanus L. (=*asper* Steph., *nec* F.).—As Johnson (1962: 156) points out, the published evidence for this beetle as an inhabitant of Britain is wholly contained in the note by Fowler (p. 37): 'Under rotting vegetable matter, and at the roots of decaying plants; very rare, and doubtful as British; sandy coasts near Bristol (Stephens); said by Curtis to have been taken near Swansea; I know of no recent captures'. No doubt it was the slightly increased weight lent to Stephens's record (1830: 211; 1839: 166) by the independent testimony of Curtis (1839) that caused Fowler to grant the species British rank, albeit with very considerable reserve. The only specimens I have seen are four very old

[11]The ascription to St. Mary's would seem to be erroneous, the specimen (*in coll.* G.C.C.) being labelled as from Tresco.

ones in the Power collection, disfigured by enormous pin-holes, and labelled 'B.M. Coll.'; and Mr. Johnson tells me there are two in the Sidebotham collection labelled 'Buxton', which almost certainly denotes the contemporary collector of that name, rather than the Derbyshire locality. Walker (1932: 72) notes one without data, 'heavily overpinned', in the Dale collection.

The four British Museum examples above mentioned were the cause of a spurious record which must here be noticed. Johnson (p. 155 *ad fin.*) writes under *R. germanus*: 'Dr. E. B. Britton of the British Museum (Nat. Hist.) informs me that there is a specimen of this species in the Power Collection in the British Museum, labelled "Southport".' Shortly after receiving Mr. Johnson's paper I chanced to be at the Museum and, having no note or memory of such a specimen, looked in the collection, whereupon the enigma was solved. The first insect in the row of four *R. germanus* was indeed labelled 'Power/Southport', but it was at once seen to be different from the rest, and in fact to be a *Psammobius sulcicollis* Ill. (well-known from that locality), while the first of the series of the latter species was, in turn, the 'missing' *Rhyssemus*. Obviously the two beetles had been inadvertently switched over when last put back in the drawer (a not infrequent occurrence, for which one should be prepared!), and Dr. Britton, unfortunately, had failed to detect the transposition. Hence arose a fictitious record of the present species for Southport, which it is necessary to delete.

However, one further British example has come (metaphorically) to light, this time luckily with locality indicated—a hitherto unpublished record. It was discovered recently by Mr. Johnson in the Blatch collection at Manchester, badly set but correctly determined, with a label 'Swansea', but no further details. Since there is no name one might expect Blatch himself to have been the captor, yet if so it is surely very odd that he apparently published no note of the capture, and this applies equally to his specimen of *Aphodius varians* (*q.v.*) from the same place. It is perhaps likeliest that he acquired both beetles from some unknown or little-known collector and was unwilling to sponsor their authenticity. If, however, this record of *Rhyssemus* be accepted as genuine—as I think it may—it provides an interesting confirmation of the old Swansea record by Curtis already cited, and renders the probability of an importation rather than less it would otherwise have been. No doubt, in former times, at least, the coasts near Swansea, at such places for instance as Crwmlyn Burrows, abounded in habitats ideally suited to this species and its allies (and also —if Stephens is to be believed—the sandy shores west of Bristol where so many rarities seem to have occurred). Despite their extreme paucity, the records of *R. germanus* (in Europe regarded as cosmopolitan) are just sufficient, I think, to retain for it a place on our list. The entire absence of records of this and the last two species from our eastern and southern seaboard, as well as any distance inland, is a point in their favour as possible indigenes; for random introductions would surely exhibit some greater degree of scattering.

It should be remembered that the small obscure Scarabaeids which pass much of their lives beneath the surface of the sand or soil at roots of herbage, etc., are far more liable to be overlooked than the dung-feeders whose food, where present, is easily located and worked for them. The former may be extremely localized in their habits and difficult to

find, as *Psammobius porcicollis* Ill. or *Diastictus vulneratus* Stm. (note that very few of the many collectors who have visited the latter's haunts in the Breckland have succeeded in taking it).

Polyphylla fullo L.—Fowler (p. 53) writes of this very fine species:

> "Although all the specimens of *Polyphylla fullo* that have been taken in Britain are undoubtedly importations, yet as they are contained in all our old collections it is scarcely possible to pass over the insect without a short notice . . . .
>
> Stephens [1830: 223] remarks that all the known British specimens have been captured on the sandy coasts of Kent, between Hythe and Ramsgate, chiefly in the neighbourhood of Deal and Sandwich, at which latter place eight examples were taken in July, 1815. Mr. W. Marshall, of Bexley, Kent, has in his possession a specimen taken alive near Belvedere, Kent; it had certainly been imported".

Stephens later (1839: 169) notes it from 'Sandy places: Deal, Sandwich; Margate; Dover; Hythe: 7'. Curtis, writing at about the same time, mentions single specimens from Deal and Dover and that it once occurred at Sandwich 'in some abundance'. Fowler's treatment of it as an introduction probably determined its subsequent fate in our catalogues, where (after being originally given full native rank) it was relegated to the lists of doubtful or imported species and finally dropped altogether.

Before going on to a reassessment of its British status, it will be well to set out the evidence rather more fully. As usual in such cases, most of the extant specimens lack details of capture. In the Power collection are five examples (including a truly magnificent female with elytra and wings out-spread), of which one carries data as follows: "Flew into the Kitchen at Deal/W. H. Mozes[?]/Evgre [i.e., in the evening] Augst 1, 1833'. There is a pair in the Dale collection at Oxford, with the ♀ marked 'Dover' and 'H. Burney, Novr. 1846' (*teste* Walker). My single specimen, a male in good condition, was purchased many years ago from the late W. H. Janson with the data 'from old coll. sold at Stevens's believed taken near Sandgate [Kent] c. 1842'. Mr. C. Johnson tells me there are two ancient-looking examples in Manchester Museum (*?ex coll.* Sidebotham) labelled 'Isle of Thanet, 1839, B.K.L.' (♂) and 'Hastings 1846' (♀). The only other capture outside Kent, and the last in Britain that I know of, is of one taken at St. Leonards on 29th July 1902 (Victoria County History of Sussex, p. 20); it is isolated from all the rest by its remarkably late date.

J. J. Walker (1932a: 72) has a long note on the species, of which the following is an excerpt:

> "The Rev. F. W. Hope had no fewer than seven specimens of both sexes, which still remain in good preservation in the Oxford University Museum; and in his copy of 'Marsham', vol. 1, opposite '*Scarabaeus Fullo* L.', p. 36, he makes the following quaint and interesting remarks:—'64. Given to me in 1818, said to have been taken at Deal, though it is a variety of the one found at Sandwich (*sic*). Bought of a Jew at Dover, he had at least 50 of them in 1826 lately captured. In 1825 captured three at Deal on the sand Hills; they come out in the evening, and are said to be destroyed by Mice. Some persons assert that Fullo comes from the French Coast. From

what part? I much doubt the power of Fullo flying 20 miles . . .' "

What appears to be by far the latest occurrence of this beetle in Kent (leaving out of account the Belvedere capture noted by Fowler, for which no date is given) is reported by Walker later in the same note, and also in his list of the Coleoptera of the Isle of Sheppey published in the same year (1932b: 121.) I quote the latter version:

> "One day in June, 1869, when walking on the sea-wall between Sheerness and West Minster soon after mid-day, I saw a 'giant cockchafer' (more than twice as large as *Melolontha vulgaris*) rise up off the path just in front of me and fly out over the water. From the excellent view, at not more than three or four yards distance, that I had of the beetle, I am fully convinced that it could have been no other than that rare visitor to our shores, *Polyphylla fullo* L.".

Although this specimen could not be captured, the authenticity of the record in the circumstances, and by so experienced an observer, cannot be questioned.

The facts, I submit, do not at all bear out Fowler's assertion that (my italics) '*all* the specimens . . . are *undoubtedly* importations': they lead rather to quite another conclusion. If it was purely an imported species, why—one is entitled to ask—did it almost suddenly and totally cease to be imported after about 1850? and why were the importations confined to such a very short stretch of our coast-line? It is, moreover, almost inconceivable that such large and conspicuous insects (which do not breed in merchandise) should have been accidentally introduced (in shipping, one must suppose) in considerable numbers at times, without attracting some notice before reaching our shores. The hypothesis of an immigrant species (as Walker and others believed it to be) is on the other hand much more plausible; for the area of the British captures is that part of our coast nearest the Continent. It is quite possible, indeed, that a few individuals have reached us in this way, probably rather as windborne stragglers, or on Channel shipping. But immigration on any larger scale would surely have resulted in a greater spread or 'fanning-out' than actually occurred; and there is the same obstacle presented by the total cessation of records by about the mid-century. The objection is real in the present case because the species has continued to occupy the same stations on the opposite shores of the Channel as formerly. Further, it would surely have been observed occasionally flying in from the sea. And lastly, it does not appear to be recognised as a migratory insect on the Continent.

We are left with the alternative of an indigenous species precariously surviving for a time in its last (or only) British stronghold, but at length dying out—a conclusion to which the available data unambiguously point. The opinion expressed in the following quotation (Buck, 1958) coincides with my own:

> "Dr. B. P. Moore [exhibited] an example of *Polyphylla fullo* F.[12] . . . a species featured in most of the older collections, and often considered a migrant. However, since the species still occurs on both the French and Belgian channel coasts on roots in the sandhills, and used to be taken in similar situations on the Kent coast, Dr. Moore

[12]Fowler (*l.c. supra*) gives Fabricius as the author of the species, in mistake for Linnaeus.

thought it most probable that at one time it was a native of Kent on the extreme edge of its range, becoming extinct in the mid-1800s".

The fact that the beetle was at least two or three times reported in numbers from the stretch of sandhills between Deal and Sandwich, the headquarters of so many very local or rare insects (residents as well as immigrants), and so similar in character to the opposite coast of France where *Polyphylla* is at home, is highly significant. Some of the more outlying British captures well away from such habitats were probably instances of wandering natural enough in a large strongly-flying insect. The Sheppey specimen may quite possibly have been of true Kentish stock, 'the last of the Mohicans', though more probably at that late date it was an adventive specimen like the St. Leonard's one. A remark by Curtis (1839) on the habits of the species is of interest; in his account of *P. fullo* he writes: 'Mr. Bracy Clark informed me that the late Mr. Francillon said that they issue from the sand, mount into the air and disappear'. This, like Hope's testimony cited above, strongly suggests the emergence of insects on their home ground—a species breeding on the spot. (The use of the plural number is itself noteworthy.)

The loss to our fauna of this splendid chafer, like that of *Platycerus*, is greatly to be regretted; but, as with that species, we should do well to acknowledge its evident former British status by restoring its name to our list as an extinct native.

(*Anisoplia agricola* Poda, Donov. (*nec.* F., Reitt. *Faun.* Germ.; = *cyathigera* Scop.) (?).—This and the next species must be given some notice as they are included as British by certain of the early authors, and the present one is not without historical interest. It is, indeed, a notorious enigma; the confusion surrounding it is such that it is not possible now even to state with any confidence what Donovan's *Scarabaeus agricola* really was. The above synonymy is more or less tentative, there being much uncertainty over the name *agricola* which has been used for at least two different species. The ascription of Donovan's Welsh insect to *A. cyathigera* Scop. (now apparently regarded as synonymous with the *agricola* of Poda) is due to Morley (1941), whom I here follow—though only with considerable reserve. It must be noted that despite Morley's statement that this last is a species 'distributed throughout all Europe', yet according to recent authors (e.g. Horion, 1951) it is absent from the west of the Continent, and so is very unlikely to be, or have been, a native of Britain (and particularly of the west). The only *Anisoplia* which might well have been British is *A. villosa* Gze. (=*agricola* F., Reitt. *F.G.*, *nec* Poda), occurring as near to us as the Channel Isles; its presence on our south or south-west coasts would not be surprising. Unfortunately, however, Donovan's description of his beetle as quoted by Morley—of which he captured 'about the latter end of July, 1801, . . . a living specimen . . . on the sea coast of . . . Caermarthen'—does not accord sufficiently well with that species, in which the fore parts are much more than 'slightly villous'. Moreover, the glowing colours with which he has depicted it (' . . . rich brassy-green . . . golden . . . glossed with purple') hardly seem to suit either of the above species—variable as they are in elytral pattern—and tend to make one a little suspicious!

(*to be continued*)

Notes and Observations

CERTAIN VARIETIES OF MACROLEPIDOPTERA RECORDED.—*Zaegaena filipendulae* ab. *lutea*. Three individuals at East Norton, Leicestershire in 1962. *Zaegaena filipendulae* ab. *cytisi*. Two individuals at East Norton, Leicestershire in 1962. *Aphantopus hyperanthus* ab. *arete*. One from chalk scrub South of Andover, Hants, July 1967. *Cleora rhomboidaria*. One found in Leicester in June 1962 which was almost completely black except for two small, oblique yellow lines on the lower end of the outer line. *Selenia lunaria* ab. *sublunaria*. The *S. lunaria* population of Barrow on Soar, Leics. consists of about 60% of typical to 20% of ab. *sublunaria* and 20% of intermediates. *Euproctis similis*. A colony on the Glenfield Golf Course, nr. Leicester which was found in August 1966, had anal tufts which were as brown or darker than those expected for *E. chrysorrhea*. *Lithosia complana*. Two individuals from the New Forest, found in July 1967, were small and had a considerable suffusion of grey on the hind wings towards the body. The forewings were also narrower than usual. *Thecla quercus*. A single female specimen from near Lyndhurst had small tawny dashes on the upper wing. This seems to answer the description of ab. *bellus*. *Semiothisa liturata* ab. *nigrofulvata*. Occurs in some numbers along with the typical moth in the Charnwood Forest area of Leicestershire.—S. R. DAVEY, 3 South Street, Barrow on Soar, Leics. 8th September 1967.

CURIOUS BEHAVIOUR OF LARVA OF ACHERONTIA ATROPOS (LINN.)—A brown larva found 13.1.67 at Newlands, Cape Town, S. Africa, one evening feeding on *Tecomaria capensis*, was put into cage with the food plant and it continued eating same.

Next morning at 8 o'clock it was found completely buried in the one inch deep layer of earth at bottom of cage. Removed and placed in usual pupation-box, with four inch layer of earth—it went down vertically at once. Remained buried until about 6.30 p.m., when it emerged and rested. Fresh foodplant was placed in box—next morning every leaf had been eaten and larva was resting on the earth. Removed to cage and put on fresh *tecomaria; cage kept darkened* and larva *remained on foodplant all day, feeding at intervals.*

Next day cage was left in full daylight—not sunlight—and by noon larva was completely buried once more. Emerged once again at 6.30 p.m., climbed up foodplant and ate all night, judging by the foliage consumed.

Repeated burying performance next day, but after emerging at 6.30 p.m. and climbing up foodplant, did not eat. Annointed itself later and pupated normally next day. Moth emerged after usual thirty-six days pupation.

Another brown specimen, found a few weeks later, retreated to the bottom of the tin containing damp earth (into which the stem of the foodplant was placed) every morning and remained there *throughout the day*, climbing up the foodplant again each evening. Never attempted to bury itself.

Every one of the much more common yellow or green coloured specimens bred at Newlands has remained on the foodplant *all day*, eating at intervals. Kept lower down the stem usually, than at night, but never left the foodplant nor stopped eating completely during the daylight hours. —H. L. O'HEFFERNAN, 63 Keurboom Road, Newlands, C.P., South Africa. 14.9.67.

BUTTERFLIES IN PRINCETHORPE WOOD, WARWICKSHIRE.—Having in mind past records of lepidoptera in these woods, I was not optimistic, but persuaded myself to visit them on 24th July 1967.

Early in the day the sun was warm and bright, but after lunch clouds gradually increased. The first ride inspected was considerably enclosed and in some 400 yards only two species were seen, about half a dozen *Pararge aegeria* L. (speckled wood) and *Aphantopus hyperantus* L. (ringlet) which were out in great numbers. The bramble and honeysuckle glades looked ideal for *Limenitis camilla* L. (white admiral) and the fritillaries, but unfortunately none were seen at this spot.

In order to make the most of the waning sunshine, after a hurried lunch I moved to a more open and attractive part of the woods, about three-quarters of a mile from my morning spot. This was immediately more rewarding, and I regretted having wasted the morning sunshine. I was struck by the similarity in many respects between this spot and parts of the New Forest: if only there had been similar insects! A *hyperantus, Maniola jurtina* L. (meadow brown) and *M. tithonus* L. (hedge brown) were very numerous in the grass verges of a pleasant footway approach. *Ochlodes venata* Brem. & Grey (large skipper) and *Thymelicus sylvestris* Poda (small skipper) were seen frequently.

The sun became more fitful, only appearing for brief intervals but I decided to go deeper into the wood and was rewarded by the sight of *Argynnis paphia* L. (silver-washed fritillary) crossing my path and disappearing over the trees. I went on for a further mile and on returning to the car it occurred to me that with warm sunshine there must surely be many more fritillaries and even *camilla*. On leaving the wood a second *paphia* was seen.—DAVID BROWN, 25 Charlecote, nr. Warwick.

ARGYNNIS PAPHIA L. ON BUDDLEIA.—At Beckhampton, near Dorchester, Dorset, on September 3, 1967, I was very much surprised to see an *Argynnis paphia* L. feeding on buddleia flowers in the garden of the home of Thomas Hardy. Also on this buddleia was *Arglais urticae* L. in plenty. There was one *Vanessa atalanta* L. and also I was surprised to see a *Pararge aegeria* L., a butterfly I had not previously seen at buddleia flowers.—DAVID BROWN, 25 Charlecote, nr. Warwick.

DIASEMIA RAMBURIALIS DUP. IN SUFFOLK.—I am pleased to be able to report that on the morning of 12th August I found a specimen of *Diasemia ramburialis* Dup. in my moth trap, here at Walberswick, Suffolk. As far as I am aware, this species has not previously been recorded from this county.—H. E. CHIPPERFIELD, The Shieling, Palmer's Lane, Walberswick, Southwold, Suffolk.

Current Literature

Interesting separates received from **Dr. H. G. Amsel** of Karlsruhe include a short account of the Moroccan microlepidoptera: **Zur Kenntis der Microlepidopterafauna von Morokko,** Notulae Entomologicae XLVI (1966) Helsinki. This lists 53 species and describes a new Synaphe subspecies, *S. morbidalis fuscalis.*

Neue Synonymien und Bemerkungen zu palaarctischen Pyraliden, Zeitschrift der Wiener Entomologischen Gesselschaft **51**: 53 propounds new synonyms for 9 Pyralid species following Dr. Amsel's inspection of type material at the British Museum during his visit to the London Entomological Congress in 1954.

Die zweite Deutsche Afghanistan-Expedition 1966 der Landessamlungen fur Naturkunde, Karlsruhe, Bitr. Naturk. Forsch. SW-Deutschl. XXVI, **1**: 3-14, gives a general account of the expedition.

Eine neue afghanistanische Stenoptilia-Art (Lep. Pterophoridae)—do —XXVI, **1**: 15-16. describes *Stenoptilia nurolhaki* with a drawing of the male genitalia.

Die afghanistanischen Arten der Anarsia-Komplex (Lep. Gelechiidae) —do—XXVI, **3**: 17-31 mentions 21 species of which 6 are new, with 5 plates illustrating genitalia dissections.

Coleophoriden aus Afghanistan by the late **Graf S. V. Toll** and **Dr. Amsel,** —do— XXVI, **3**: 5-16 mentions 8 known species and 38 new species, with two plates of female and three plates of male genitalia.—S.N.A.J.

From the same publication, I have received from **Dr. Klaus Sattler** a copy of his paper, **Die Gattungen** Ornativalva **Gozmany und** Horridovalva **gen. n.** (Lep. Gelechiidae). Beitr. naturk. Forsch. SW-Deutschl. Bd. XXVI, **3**: 33-90. Karlsruhe, 1, 7, 1967.

In this very thorough survey of *Ornativalva* and the setting up of *Horridovalva*, Dr. Sattler, after a general introduction, gives the synonymy of *Ornativalva* Gozmany, finishing by allotting the 32 species (of which 18 are new), to six groups, followed by two keys one to the male, and one to the female genitalia.

Full descriptions of the species follow, with the selection of eight lectotypes.

The family *Horridovalva* is set up for *H. tenuiella*, a species described by the author from material in the Walsingham collection at the British Museum (Natural History).

The 19 plates include 79 figures by the author, nine of forewing patterns, and the remainder of male and female genitalia, and a few of other anatomical details.

Throughout the paper, the author's painstaking industry commands the highest commendation.—S.N.A.J.

Where have all the butterflies gone? Professor E. N. Willmer: The Observer, Sunday, 20th August 1967: This interesting article, in spite of its title, does not limit itself to the shocking reduction in insect populations, and even extends itself to suggest that the increased use of certain chemicals might possibly be affecting the human species and in some way be responsible for the increase in crime. The whole subject is one calling for informed opinion, and the present article is well worth studying.

On 27th August letters commenting on this paper were published, expressing views both for an against the author's remarks, but one, which blames the use of weedkillers (presumably selective) "on lowland and some upland pastures" points out that the loss of the insects must be weighed against increased productivity. This contention seems to ignore the fact that of six butterflies illustrated in the article, four are

grass feeders, and one feeds on trefoils; the only "weed" eater, the small copper, is on sorrel, and a selective weedkiller should only have destroyed this last-named plant.

To me, the whole matter seems to be the result of the great food-chain upset following the myxamatosis disaster and the wave of extravagant use of the now proscribed insecticides; I would appreciate readers' views on the factors causing the alarming loss of such a huge proportion of our insect numbers.—S.N.A.J.

Obituary

WILLIAM JAMES KAYE (1875-1967)

On 5th May 1967, within a fortnight of his 92nd birthday, there passed away one who might well have been termed the 'doyen' of British entomologists. For William Kaye had been a fellow of the Royal Entomological Society since 1896 and was also its 'father' by virtue of age, too. His father, who was the manager of the Hongkong Bank in London, sent him in his early years to Harrow School, where he was a contemporary of Sir Winston Churchill. He well remembered that great man as a none too promising schoolboy. After obtaining an engineering degree at King's College, London, he went for a time to Leicester. But when his father died at 60 he abandoned this vocation. The lure of the wilds and the love of collecting overtook him. He made his first expedition to the West Indies in 1898 and thereafter for nearly forty years, until 1937, he paid successive visits to South America, often accompanied by his wife and two daughters. But Trinidad was probably his favourite venue. Already in 1904 he published his first list of the butterflies of that island. His net was in use over a wide area of those regions, mainly in south Brazil and the environs of Rio de Janeiro, also in British Guiana, Venezuela, Costa Rica and Jamaica. From all these territories he amassed a very big and valuable collection of their Rhopolocera, embodying many new species, types and undescribed races.

About his travels and his rich harvest from them he wrote up almost annually important papers which appeared in the leading journals. We owe to him a vast source of information about the lepidoptera of that vast subcontinent. In 1927 he published in collaboration with Sir Norman Lamont a catalogue of the moths of Trinidad. Though he did not wield his net much in Europe, he had visited South Africa and Ceylon and, above all, the British fauna was very dear to him. He had collected in most parts of the British Isles and just before the last war, in company with the late C. N. Hughes, he went to Kerry where he claimed to have beaten the larvae of the White Prominent, but did not breed them out.

Willie Kaye was ever eager to talk about his odysseys and to exhibit some of his glorious collection, especially in former days at the South London Entomological Society of which he was president in 1911. But the lepidoptera was not his only pastime. At his lovely home on the downs near Guildford he had a hothouse full of superb orchids which he tended himself and, in his latter years, was greatly assisted by his second wife. Always of the most kindly disposition, he was full of vigour of mind and body to the very end of his long and most active life. Every sympathy is conveyed from his many friends to his widow and surviving daughter in their bereavement.—C.G.M.deW.

H. pyritoides Hufn.

p. 41—

Dungeness (div. 15), 1963 (1), 1964 (7) (R. E. Scott).

T. batis L.

p. 41—

Dungeness (div. 15), one, August 27, 1964 (T. W. Harman).

T. ocularis L.

pp. 42-43—

Hayes (div. 1), one at sugar, July 14, 1938 (R. F. Birchenough). Lee, common at m.v.l., 1952-62 (C. G. Bruce). Orpington, June 19 (1), July 9 (1), 10 (2), 1966 (I. A. Watkinson). Ham Fen (div. 4), one, 1955; Ickham, three, 1955; St. Margaret's Bay (div. 8), one melanic, 1950; Dover, one, 1952, two, 1953, one melanic, 1955 (G. H. Youden). Meopham (div. 6), June 6, July 4, 5, 1959, June 18, 1960, June 7, 1961 J. Ellerton). Brook (div. 8), 1961 (de Worms, *Entomologist*, **95**: 101). St. Peters (div. 9), June 27 (1), July 7 (1 melanic), 1957 (W. D. Bowden). Sevenoaks Weald (div. 11), June 18-25, 1960 (6) (E. A. Sadler). Maidstone, one, June 30, 1962 (B. K. West). Ham Street (div. 12), 1962 (de Worms, *Entomologist*, **96**: 55). W. Ashford and Willesborough, common, 1961 (M. Singleton).

This is one of those species that has shown a very remarkable extension of range within recent years. It was unknown to occur with any certainty in Kent prior to 1900, though in 1879, Carrington (*Entomologist*, **12**: 211) ambiguously referred to it as a species that "may be taken" in Darenth Wood (C.-H.).

T. or Schiff.

p. 44—

Coombe Wood (div. 8), three, 1896-98; Poulton, one, 1899 (Stockwell, *Diary*). Dover, one, June 28, 1957 (G. H. Youden).

T. duplaris L.

p. 45—

Ickham (div. 4), two, 1956; Westwell (div. 7), one, 1957; Ham Street (div. 12), one, 1955, one, 1957 (G. H. Youden). Willesborough (div. 12), one, 1961 (M. Singleton); two, 1963 (W. L. Rudland). Ham Street, several, July 24, 1965 (R. G. Chatelain). Goudhurst (div. 13), four, 1955 (W. V. D. Bolt). Woodchurch (div. 14), one, August 6, 1899 (Stockwell, *Diary*).

T. fluctuosa Hübn.

pp. 46-47—

Abbey Wood (div. 1) (Juby and Hards, 1925). Farningham Woods, one, July 27, 1962; Orpington, one in m.v. trap, July 1, 1963 (R. G. Chatelain). Fairseat (div. 6), July 30, 1960, July 22, 1961 (J. Ellerton). Barham (div. 8), several, 1959 (G. H. Youden). Woods near Riverhead (div. 10)*, one, June 3, 1950; Penshurst (div. 11)*, several, June 8, 1945 (D. G. Marsh). W. Ashford (div. 12), two, 1961 (M. Enfield). Ham Street, 1962 (de Worms, *Entomologist*, **96**: 55). Goudhurst (div. 13), two, 1956 (W. V. D. Bolt).

A. diluta Schiff.

p. 48—

Dover Town (div. 8), one, September 7, 1950 (G. H. Youden).

A. flavicornis L.

p. 48—

Broad Street (div. 7), April 10, 1955 (2) (E. Philp).

p. 49—

Orlestone Woods (div. 12), common, 1961 (M. Singleton). Goudhurst (div. 13), not uncommon at light (W. V. D. Bolt, *personal communication*, 1961).

P. ridens F.

p. 49—

Bromley (div. 1), one in m.v. trap, May 2, 1966 (D. R. M. Long).

Line 14 from bottom—for "Hods" read: Hoads.

O. antiqua L.

p. 51—

It is likely this species was formerly plentiful in the Kent orchards. Theobald (*J. S.-E. Agric. College, Wye*, **1908** (17), states that ova were found in January 1907, at Brenchley and Leeds (both in div. 11); and the same observer cites S. Pickering as saying that paraffin emulsion is fatal to the larvae.

Darenth Wood, larva beaten from birch, September 12, 1934, imago reared September 28 of the *same year* (A. R. Kidner).

D. fascelina L.

p. 51—

Willesborough (div. 12), one in m.v. trap, July 17, 1964 (W. L. Rudland); is suspected casual (C.-H.). Dungeness (div. 15), in m.v trap, July 14-September 3, 1962 (65), with maximum (8) on August 6; July 6-August 20, 1963 (99), with maximum (10) on July 22, 23, August 3; June 27-August 8, 1964 (217), with maximum (26) on July 28; Boulderwell, July 9-August 23, 1966 (28), with maximum (4), July 25 (R. E. Scott). Dungeness, one at light in 1955 on September 10 (E. Philp); exceptionally late date (C.-H.).

D. pudibunda L.

p. 52—

Dungeness (div. 15), one, June 14, 1962, two, May 18-19, 1964 (R. E. Scott). F. Wacher (*Trans. E. Kent nat. Hist. Soc.*, **1872**: 33) exhibited larvae of the "Hop-dog" [from Canterbury district]. Ab. *concolor* Stdgr., ♂ taken by W. V. D. Bolt, Goudhurst, 1956 (C.-H.).

L. salicis L.

p. 57:

line 8 from top—for "*calix*" read: and *Salix*.

p. 58—

Goudhurst (div. 13), two at light, 1957 (W. V. D. Bolt).

L. monacha L.

p. 58—

R. F. Birchenough states he never reported it from Hayes. Therefore in line 4 from bottom—delete "and Hayes".

p. 59—

Hoads Wood (div. 11), several, August 2, 1963 (R. G. Chatelain). Goudhurst (div. 13), not uncommon at light (W. V. D. Bolt). Sandgate (div. 16), one, 1961 (N. Reay-Jones).

M. neustria L.

p. 60—

A vast concourse appeared in the Sittingbourne and Faversham areas (div. 7) in 1907 on apple and plum and then descended and

attacked the cherry trees; "to show the magnitude of the attack, twenty to thirty bushels of caterpillars have been collected and killed" (R. Mercer, in Theobald, *J. S.-E. Agric. College, Wye,* **1908** (17): 92). Wye (div. 12), apple and pear defoliated (Theobald, *J. S.-E. Agric. College, Wye,* **1902** (11): 51).

T. crataegi L.

p. 62—

The species is apparently extinct in v.-c. 16.

Willesborough (div. 12), September 9, 1964 (W. L. Rudland) Orlestone Woods, several larvae, 1961 (M. Singleton); five imagines at m.v.l., in Faggs Wood, September 3, 1964 (E. A. Sadler).

P. populi L.

p. 64—

Minster (div. 4), one, November 30, 1924 (W. E. Busbridge, *Diary*) Goudhurst (div. 13), common at light (W. V. D. Bolt, *pers. comm.*, 1961). Boulderwell, near Dungeness (div. 15), January 13 (♂), 15 (♂), 1966 (R. E. Scott).

E. lanestris L.

p. 64—

This species has not been observed in the County to my knowledge since 1951 (C.-H.). Chattenden (div. 6a), "I found one colony of the larva of this insect on blackthorn" (Crozier, *Nat. Hist. Rev.*, **5**: 128) [F. O. Waller said it was very common on sloe and damson (at Ulcombe near Maidstone (div. 11)) (Theobald, *J. S.-E. Agric. College, Wye,* **1910** (19): 92). Query correct determination? (C.-H.).]

L. quercus L.

p. 65—

Sevenoaks Weald (div. 11), larvae February 22, 24, 1959, imagines emerged July 26, August 7, 1960 (E. A. Sadler). Dungeness (div. 15) 1962 (2); 1963 (9); 1964, July 18-August 7 (30), with max. (6) on July 25 (R. E. Scott).

L. trifolii Schiff.

p. 66—

D. S. Fletcher (*in litt.*) points out that according to the rules of zoological nomenclature it should be *flava* Chalmers-Hunt. Therefore in line 15 from top—for "**flava** Tutt" read: **flava** C.-H.

p. 67—

Dungeness (div. 15), August 9-October 11, 1962 (about 12); August 5-September 14, 1963 (6); August 2-29, 1964 (37), with max. (8) on August 26 (R. E. Scott). At meeting of Ent. Soc. London, December 2, 1872, F. Bond exhibited "a fine new British species of Inchneumonidae (*Anomalon fasciatum*)", bred by R. Mitford from larva from Romsey (*sic*) [Romney Marsh] (*Ent. mon. Mag.*, **9**: 200).

Line 15 from top—delete "bird warden".

M. rubi L.

p. 68—

Sheppey (div. 2), about 6 ♂♂, flying at Warden Point, June 22, 1955. Dungeness (div. 15), "on 12th October 1955, a party of migrant Jays arrived and were seen to feed on many of the fox moth larvae that were sunning themselves on the shingle there" (E. Philp, *in litt.*).

R. F. Birchenough states he never reported it from W. Wickham Hayes, and Keston. Therefore delete accordingly in lines 21 and 22

from bottom.

P. potatoria L.

p. 69—

An interesting aspect of the variation is presented by B. K. West (*pers. comm.*) who states that he has bred many *potatoria* from the marshes about Dartford and Higham (both in div. 2), and that every ♀ resulting conformed to typical coloration, but that all his ♀♀ of *lutescens* coloration come from E. Kent.

E. versicolora L.

p. 72—

Two in Hope Dept., Oxford, labelled "Kent 1868" (R. F. Bretherton, *in litt.*).

S. pavonia L.

p. 74—

Headcorn (div. 11), ♂, "caught in an exhausted condition in a hop garden in May 1961—by a housewife" (M. Singleton).

First Record, 1832: Kent (Rennie, *Conspectus*, 36), replaces that given.

D. binaria Hufn.

p. 74—

Sandgate (div. 16), 1960 (3) (N. Reay-Jones).

D. cultraria F.

p. 75—

Sevenoaks Weald (div. 11), one, September 10, 1960 (E. A. Sadler).

D. lacertinaria L.

pp. 76-77—

Goudhurst (div. 13), common (W. V. D. Bolt, *pers. comm.*, 1961).

Sandgate (div. 16), 1960 (2) (N. Reay-Jones).

C. glaucata Scop.

p. 77—

First Record, 1858: Chatham district, "several specimens occurred" (Crozier, *Nat. Hist. Rev.*, **5**: 128), replaces that given.

N. cucullatella L.

p. 77—

E. Malling (div. 11), larvae feeding not uncommonly in 1939 on Myrobolan (Massee, *Rpt. E. Malling Res. Stn.*, **1939**: 70).

N. albula Schiff.

p. 79—

Dungeness (div. 15), July 17, 1964 (9) (R. G. Chatelain); August 4 (1), 6 (3), 1965 (C.-H.). Greatstone, July 21, 1963 (1) (C.-H.).

C. confusalis H.-S.

p. 80—

Tutt (*Ent. Rec.*, **20**: 213) records that on July 3, 1908, he received some half-grown larvae from Mr. Crocker, "collected just previously in the Chatham district. They were at the time feeding on oak".

N. mundana L.

p. 81—

Goudhurst (div. 13), one at light, 1958 (W. V. D. Bolt).

p. 81—

E. Kent [Reculver (div. 4)] (Battley, *Trans. E. Kent nat. Hist. Soc.*, **1904**: 35).

C. senex Hübn.

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION
(Founded by J. W. TUTT on 15th April 1890)

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Edited by S. N. A. JACOBS, F.R.E.S.

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Phasis argyroplaga spec. nov.

Fig. 1. ♂ Holotype (upperside). Fig. 3. ♀ Paratype (upperside). Koelefontein Hills, 28.x.1937.

Fig. 2. ♂ Holotype (underside). Fig. 4. ♀ Paratype (underside). Same data.

Figures approximately 1·8 times natural size.

Photo : H. N. Wykeham.

Some Comments on the *Phasis wallengrenii* (Trimen)* group (Lepidoptera : Lycaenidae), with a description of a new species

By C. G. C. Dickson

Although it clearly contains a number of distinct taxa this group has been largely neglected since Trimen discovered, on hills near Stellenbosch in December, 1862, the only member of the complex which, up to the present, had been named—i.e., apart from Trimen's own description under, "Var. A.," of another, widespread insect of this group and his drawing attention to some further variation which he had noticed within the group.

The present writer has failed, so far, to rediscover *Phasis wallengrenii* near Stellenbosch (and there is a possibility of its no longer existing there owing to the great changes which have taken place in the surrounding country since Trimen's time), but specimens which appeared to come fairly close to the original ones were encountered on a hillside near Mamre as long ago as 1936 (i.e., on 5th November of that year). This colony was restricted to an extremely small piece of ground. Twenty-seven years later, and after much intensive searching, the same insect was found on some neighbouring hills—in fair numbers and extending somewhat brokenly along a narrow strip of country of about a mile in length. On 14th December 1949, a rather different representative of the group, with generally heavier, dark upperside markings, was found to occur on the Piquetberg Mountain (this insect also having generally, though less pronouncedly, thin silvery markings on the underside, but usually of a white shade, as against the often more golden tint of those of Mamre specimens). Within its own restricted area, the butterfly is fairly numerous in this locality. Trimen's description of *Ph. wallengrenii* and the coloured figure of what was in fact this insect in his 1866 work, Rhopalocera Africae Australis" (Pt. II, Pl. 5, fig. 3), would lead one to believe that the light underside markings of the original insect were pure silvery-white, without any golden tint.†

When examples from the Karroo tracts and Little Namaqualand are compared with nominate *Ph. wallengrenii* the difference is found to be so pronounced—particularly as regards the silvery markings of the underside—as to indicate a specific difference and there would appear to be good grounds for believing that at least two or three additional sub-species occur in the Cape Province. Judging by specimens which have been studied, those from mountainous localities have a general tendency to be more darkly marked on the upperside than ones from the lower ground, a case in point being a population which was found at an altitude of some 6,000 ft. in the Nieuwveld Mountains, near Beaufort West, but this has applied also to Piquetberg specimens.

The representative of the group which has been found to frequent

**Zeritis wallengrenii* Trimen, South African Butterflies, Vol. II, pp. 192-194 (1887).

†Trimen's type series of *wallengrenii* is in the British Museum (Natural History). Careful examination reveals that the underside markings are basically metallic silver, and that only in certain lights a slightly golden tinge may be imparted by the surrounding rufous-brown ground colour.—G. E. T.

much of the Southern and, further inland, Western portions of the Karroo (and which also penetrates some of the adjoining country) exhibits characteristic features which, although showing some variation, enable this insect to be recognised readily as a distinct entity. Trimen's description of "Var. A." seems in large measure to fit this insect—if not in all respects. As this butterfly is possibly the most widespread member of the group, it is the one which is being described in the present paper.

Phasis argyroplaga sp. nov.

Differences between this insect and *Phasis wallengrenii* (Trimen) are noted hereunder.

Male. Upperside.

Forewing. Not very different from that of *wallengrenii* (in the holotype there is more dark scaling along area 1b, longitudinally, than is often the case in the present species).

Hindwing. Dark basal suffusion usually much reduced or in some specimens almost absent. If present, the black streak running downwards from inner portion of the large apical patch commences further from margin and thus encloses (or partially encloses) a broader but more wedge-shaped strip of the tawny-orange ground-colour than is usual in *wallengrenii.* In the holotype, this character is only partially represented by a short black streak near the anal angle. Projection at the end of vein 2 reduced and but very slight in present species.

Underside.

Forewing. Inner half of costa from base more prominently light-edged (i.e., with silvery-white). Subapical area greyish- or almost blackish-brown (this colouring also extending along costal region and narrowly also along termen). The larger silvery markings which occur in the subapical area in *wallengrenii,* enlarged considerably in the present species—the two in areas 6-7 being much broader in proportion to their length; the submarginal silvery-white markings as a whole somewhat thickened and the white spaces in the cilia themselves more conspicuous than in *wallengrenii.* Sub-marginal dark markings below vein 4 virtually united and forming a well-defined almost black streak.

Hindwing Ground-colour greyish—or almost blackish-brown (the shade varying somewhat in different specimens), with but little lighter variegation, and the veining as a whole not or only partially lighter than the background. The silvery-white markings nearly all noticeably enlarged or thickened. (The development of the light markings in all wings is well exemplified in the holotype.)

Length of forewing: 14·5-17·5 mm. (16.5 mm., in holotype.)

Female. Upperside.

Very similar on the whole to that of *wallengrenii* and with the dark pattern varying considerably in detail in different specimens.

Hindwing. Inner edge of dark marginal border, as in the male, more even than in *wallengrenii,* but the border well curved in conformity with the different wing-shape of the female. Projection at the end of vein 2 comparatively slight—not prominent as in *wallengrenii.*

Underside.

Forewing. The subapical area usually less dark than in the male and approaching more the tone of that of *wallengrenii;* strip between the

margin and the dark submarginal markings broader than in the male, usually lighter and more as in *wallengrenii;* the dark submarginal marking often but not always more in the form of separate spots, than in the male. Enlargement of the sub-apical silvery-white markings on the whole rather less pronounced than in the male, but the light divisions of the cilia about equally prominent.

Hindwing. Ground-colour usually lighter than in the male and with the veining and some other portions more or less of an ochreous-fawn tint and more reminiscent of the corresponding parts in *wallengrenii.* Enlargement or thickening of most of the silvery-white markings as in the male, but in some females not quite as pronounced; white divisions of cilia generally prominent, or fairly so.

Length of forewing: 17-20 mm. (about 18 mm., in allotype). (One abnormally small female has a forewing length of only 14 mm.)

In both sexes the underside of the body, palpi beneath and the legs are more silvery-white than in *wallengrenii.*

♂ Holotype, WESTERN CAPE PROVINCE: Karroo hills (western portion of Wagenbooms Bergen) between Matroosberg (formerly Triangle) Railway Station and Eendracht, 13.xi.1966 (C. G. C. Dickson); British Museum Reg. No. Rh. 18612.

♀ Allotype, W. CAPE PROVINCE: Koelefontein Hills, between Worcester and Robertson, 28.x.1937 (C. G. C. Dickson); British Museum Reg. No. Rh. 18613.

Paratypes presented to British Museum (Natural History), W. CAPE PROVINCE: N.E. of Matroosberg Rly. Stn., 16.xi.1962 (C.G.C.D.), 1 ♂, 1 ♀; 13.xii.1962 (C.G.C.D.), 1♂.

Paratypes in author's collection (and collected by himself), W. CAPE PROVINCE: as allotype, 1 ♀; Roodebery, near Vink, 12.x.1950, 1 ♂; Karbonaatjes Kraal (beyond top of Hex River Pass), 16.xi.1962, 1 ♀; between Matroosberg Rly. Stn. and Tafelberg, 14.xii.1948, 1 ♀; N.E. of Matrooseberg Rly. Stn., 6.xi.1966, 1 ♀; S. of foot of Koo Pass, 8.xi.1962, 1 ♀; Wagenbooms Bergen foothills, N. of Montagu, 12.xi.1962, 1 ♂, 1 ♀ nr. Oudtshoorn 28-29.x.1949, 2 ♂ ♂.

Paratypes in coll. C. W. Wykeham (and collected by himself), W. CAPE PROVINCE: Koelefontein, 21.x.1962, 2 ♂♂, 1♀; Nougas Hills (Western Karroo) 13.xi.1966, 1 ♂; Montagu, 11-15.xi.1962, 26 ♂♂, 9 ♀♀; Langeberg, 15.xi.1962. 1 ♂.

Paratypes in Coll. Transvaal Museum (all collected by Dr. G. van Son). W. CAPE PROVINCE: Boskloof, Worcester, x.1961, 1 ♂; Montagu x.1941, 1 ♂, 1 ♀; Matjesfontein, 20.x.1941, 1 ♂, 18.x.1954, 1 ♂, 1 ♀; Grootvadersbos (E. of Swellendam), 1-6.xi.1940, 1 ♀; Seven Weeks Poort, xi.1940, 1 ♀; Nr. Meirings Poort, 23.x.1954, 1 ♂.**

Some specimens of both sexes from the Roode Zands Mountains, above Tulbagh Kloof (A. J. H. Duke, 16.xii.1948), which are considered to represent a variation of *argyroplaga* are on the whole more darkly marked than usual on the upperside and the silvery markings of the underside are not, in all of them, all quite as enlarged or thickened as in many of

**Other Transvaal Museum specimens seen and considered to be conspecific with *Ph. argyroplaga* but not included as paratypes: Glenconnor, C. P. (*Gowan C. Clark*), 26.x.1942, 1 ♂, 16.x.1942, 1 ♀; Naroega Pass, C. P., 29.x.1948 (*G. van Son*), 1 ♀.

the Karroo specimens of this species. The forewings tend to be a little less elongated and the average size of these specimens is below that of most examples of *argyroplaga*—although some of them are of normal size. It is interesting that this colony should have been found some thirty miles from (and W.N.W. of) the nearest country of Karroo type. Representatives of this butterfly have been given to the British Museum. Somewhat similar specimens of both sexes which were darker than usual on the upperside were taken on the Stettyns Berg (at an altitude of about 2,000 ft. above sea-level), above Brand Vlei, on 20th November, 1965; and a pair of these specimens are now in the collection of the British Museum.

The late Dr. G. van Son did some preliminary investigation on the *Ph. wallengrenii* group and realised that the valves of the male genitalia showed some difference in various members of the group. He had apparently chosen and intended to use the name *argyroplaga*, eventually, for the present insect.

This very beautiful butterfly may often be found in good numbers in the places which suit it particularly; in November 1965 it was especially plentiful on a gravel road to the north of Montagu, on the way to the Wagenbooms Bergen. The writer himself first observed it near Montagu Baths, half a century ago. It has a very quick flight, close to the ground, but flies only for short distances as a rule and, after settling abruptly, keeps its wings closed—with the striking silvery markings visible. This applies particularly to the male. Specimens may, however, be observed feeding at flowers, and they are very partial to the yellow flowers of a Composite shrub which is of frequent occurrence in the Karroo. Individual specimens generally remain within a circumscribed area of the veld. The author's own captures have been made from fairly early in October to the middle of December, but November is perhaps the best month for this butterfly.

Young larvae of the *Phasis wallengrenii* group have failed to survive on plants on which eggs have been laid and it is concluded that the early stages are likely to be wholly dependent on ants.

An additional note by Trimen on a member of this complex is given in "South African Butterflies", Vol. III, p. 416 (1889). Swanepoel includes some good observations in his "Butterflies of South Africa", p. 125 and Pl. vi, figs. 5-6 (1953)—the specimens which are figured apparently representing the newly-described *Ph. argyroplaga;* while Murray gives a description of *Ph. wallengrenii* (Trim.) in "South African Butterflies: A Monograph of the Family Lycaenidae", pp. 114-115 (1935)—but the insect illustrated in Fig. 62 apparently corresponds to *Ph. argyroplaga* and represents this latter species.

The author's sincere thanks are due to Mr. G. E. Tite who has most obligingly perused this paper before its publication. Dr. Vári has kindly made available for examination Transvaal Museum material of the group concerned.

"Blencathra", Cambridge Avenue, St. Michael's Estate, Cape Town.

HERSE CONVOLVULI L. IN NORTHAMPTONSHIRE.—A male convolvulus hawk moth was brought to me on the 5th September. It was dead, but had been a very fresh specimen in fine condition. I passed this on to the Area Recorder, Mr. Peter Gent. — J. H. PAYNE, 10 Ranelagh Road, Wellingborough, Northants. 30.ix.1967.

ERRATA—page (360)

Goudhurst (div. 13), one at light, 1958 (W. V. D. Bolt).

C. senex Hübn.

p. 81—

E. Kent [Reculver (div. 4)] (Battley, *Trans. E. Kent nat. Hist. Soc.*, **1904**: 35).

Lepidoptera at Heversham

By Gaden S. Robinson

Heversham is a small south Westmorland village straddling the A6 road about five miles south of Kendal. A mile to the west lies the estuary of the River Kent, and Heversham is situated about the north-south line demarcating the dry, mildly alkaline rendzina soil overlying carboniferous limestone and the wet, acidic drained marsh lands surrounding the estuary. Consequently two entirely different vegetation types are prevalent in the vicinity. The rendzina supports ash and sycamore and the other typical calcicole plants, while to the west, *Salix* species, birch and alder are apparent. Much of the surrounding land is permanent pasture, but there are several small woods nearby (the nearest, Ellers' Wood, is 350 yards to the south-west) and there is a little arable farming on the drained estuary-lands. The lepidoptera at Heversham are, of course, a fairly true reflection of this situation.

Climatically, Heversham is fairly well off compared with much of the north-west. The rainfall average is 47·2″ per year; the winters are warm (mean 39°F in January) and the summers cool (mean 62°F in July and August). The locality is windswept—one can rarely record a still night in winter: as a result catches in the trap are generally small.

I was very kindly allowed to run a mercury vapour light trap (125 watt Robinson non-portable pattern) at Heversham Grammar School from September 1965 until I left school in July 1967. Trapping was continuous throughout each school term, the trap being switched on all night. In the morning the numbers of each species of macro-lepidoptera in the trap were recorded and most of the specimens released. I found it impossible to do the same for the micro-lepidoptera, so I compiled a straightforward check list: this is, I feel, probably somewhate incomplete.

The trap was operated between the following dates, 16.iv.1965 and 8.xii.1965; 11.i.1966 and 25.iii.1966; 25.iv.1966 and 13.vii.1966; 17.ix.1966 and 28.xi.1966; 14.i.1967 and 5.iii.1967; and 15.iv.1967 and 11.vii.1967.

Thus the only significant period missed was that between mid-July and mid-September. Despite the peak period of entomological activity being missed I felt that the records obtained were worth publishing.

In 1966 and 1967 I managed a small amount of field work and compiled a list of lepidoptera found within a four-mile radius of the school, which had not been taken in the trap. As the well-known localities of Meathop Moss and Witherslack Woods fall in this rather arbitrary (comfortable cycling-range) radius it will be realized that this list is a very incomplete one!

Identifications and numbers are, I am sure, correct except possibly for the *numbers* of certain Eupithecias.

I should like to express my great debt of gratitude to the late Mr. R. M. Mere, Mr. E. C. Pelham-Clinton and Dr. N. L. Birkett for their generous help in identification of some of my material and for their encouragement.

The following is a list of the macro-lepidoptera caught in the trap in three periods: Autumn 1965, 1966, and spring and summer 1967. The numbers refer to the number of specimens caught in the trap in that period. The dates refer to the first and last dates on which the species was caught. If either of these dates would fall presumably in a school holiday, they have of course been omitted.

The nomenclature and order of species used is that of the A.E.S. Checklist (1946).

Species	Total caught.	Autumn 1965.	First seen.	Last seen.	1966.	First seen.	Last seen.	Spring/ summer 1967.	First seen.	Last seen.
SPHINGIDAE:										
Laothoë populi L.	26	.	.	.	14	2.vi	.	12	12.vi.	.
Deilephila elpenor L.	4	.	.	.	2	27.vi	.	2	21.vi.	.
NOTODONTIDAE										
Chaonia ruficornis Hufn.	4	.	.	.	3	1.v.	3.v.	1	10.v.	.
Pheosia tremula Cl.	8	.	.	.	2	15.vi.	.	6	3.vi.	.
P.gnoma Fab.	21	.	.	.	6	7.vi.	.	15	31.v.	.
Notodonta ziczac L.	4	.	.	.	.	.	.	4	12.vi	.
N.dromedarius L.	9	.	.	.	6	1.v.	.	3	7.vii	.
Lophopteryx capucina L.	10	.	.	.	4	12.vi.	.	6	10.vi.	.
Phalera bucephala L.	7	.	.	.	4	8.vi.	.	3	4.vi.	.
THYATIRIDAE:										
Habrosyne derasa L.	8	.	.	.	4	14.vi.	.	4	9.vii	.
Thyatira batis L.	5	.	.	.	3	7.vi	.	2	16.vi.	.
Achlya flavicornis L.	5	.	.	.	5	6.iii.	.	.	.	.
LYMANTRIIDAE:										
Dasychira pudibunda L.	6	.	.	.	4	8.vi.	.	2	14.vi.	15.vi.
Euproctis similis Fuessly	1	.	.	.	.	.	.	1	9.vii.	.
LASIOCAMPIDAE:										
Poecilocampa populi L.	67	30	26.x.	4.xii.	37	19.x.	26.xi.	.	.	.
DREPANIDAE:										
Drepana falcataria L.	6	.	.	.	2	5.vii.	.	4	5.vi.	.
D.lacertinaria L.	1	.	.	.	.	.	.	1	13.vi.	.
Cilix glaucata Scop.	3	.	.	.	1	8.vi.	.	2	13.vi.	.
NOLIDAE:										
Nola cucullatella L.	4	.	.	.	1	7.vii.	.	3	5.vii.	.
Celama confusalis H.-S.	4	.	.	.	4	1.v.	2.vi	.	.	.
ARCTIIDAE:										
Spilosoma lubricipeda L.	221	.	.	.	139	23.v.	4.vii	82	25.v.	.
S.lutea Hufn.	233	.	.	.	155	31.v.	9.vii	78	8.vi	.
Cycnia mendica Cl.	4	.	.	.	2	12.v.	15.v.	2	19.v.	5.vi.
Phragmatobia fuliginosa L.	3	.	.	.	1	9.vii.	.	2	16.vi.	15.vi.
Diacrisia sannio L.	1	.	.	.	.	.	.	1	30.vi.	.
Arctia caja L.	2	.	.	.	2	25.vi.	.	.	.	.
Callimorpha jacobaeae L.	1	.	.	.	.	.	.	1	30.vi.	.
Rudaria mundana L.	215	.	.	.	101	30.vi.	.	114	23.vi.	.
Cybosia mesomella L.	6	.	.	.	1	30.vi.	.	5	29.vi.	.
Lithosia lurideola Zink.	5	.	.	.	4	5.vii.	.	1	6.vii.	.
NOCTUIDAE										
Colocasia coryli L.	4	.	.	.	2	31.v.	11.vi.	2	25.v.	15.vi.
Apatele leporina L.	2	.	.	.	1	16.vi.	.	1	18.vi.	.
A.alni L.	1	.	.	.	.	.	.	1	15.vi.	.
A.psi L.	78	.	.	.	23	10.vi.	.	55	13.vi.	.
A.rumicis L.	55	.	.	.	21	3.vi.	.	34	13.vi.	.
Cryphia perla Schiff.	44	.	.	.	29	26.vi.	.	15	4.vii.	.
Agrotis segetum Schiff.	5	1	21.x.	.	1	14.vi.	.	3	19.vi.	.
A.clavis Hufn.	8	.	.	.	5	16.vi.	.	3	29.vi.	.
A.exclamationis L.	726	.	.	.	430	5.vi.	.	296	13.vi.	.
A.ipsilon Hufn.	94	17	.	6.x.	77	15.iii.	30.x.	.	.	.
Lycophotia varia Vill.	13	.	.	.	8	22.vi.	.	5	1.vii.	.
Peridroma porphyria Schiff.	9	2	25.x.	26.x.	7	8.x.	26.xi.	.	.	.
Graphiphora augur Fab.	14	.	.	.	12	25.vi.	.	2	4.vii.	.
Amathes glariosa Esp.	3	3	18.ix.	20.ix.	.	.	.	.	.	.
A.baja Schiff.	7	.	.	.	3	4.vii.	.	4	3.vii.	.
A.c-nigrum L.	15	1	26.ix.	.	10	27.vi.	7.x.	4	5.vii.	.
A.ditrapezium Schiff.	2	.	.	.	2	3.vii.	.	.	.	.
A.triangulum Hufn.	22	.	.	.	16	29.vi.	.	.	.	.
Diarsia brunnea Schiff.	3	.	.	.	3	8.vii.	.	.	.	.
D.festiva Schiff.	67	.	.	.	34	9.vi.	.	33	10.vi.	.
D.rubi View.	74	18	.	6.x.	33	1.vi.	23.ix.	23	31.v.	23.vi.
Ochropleura plecta L.	311	1	.	19.ix	154	2.vi.	20.x.	156	5.vi.	.
Triphena comes Hub.	6	4	.	23.ix.	2	7.vii.	18.vii	.	.	.
T.pronuba L.	286	67	.	26.x.	187	17.vi.	10.x.	32	23.vi.	.
T.janthina Schiff.	1	.	.	.	1	.	23.ix.	.	.	.
Axylia putris L.	107	.	.	.	62	7.vi.	.	45	15.vi.	.
Polia hepatica Cl.	2	.	.	.	2	8.vii.	.	.	.	.
Mamestra brassicae L.	26	.	.	.	14	2.vi.	30.ix.	12	12.vi.	.
Melanchra persicariae L.	17	.	.	.	12	3.vii.	.	5	26.vi.	.
Diataraxia oleracea L.	18	.	.	.	12	16.vi.	.	6	14.vi.	.
Ceramica pisi L.	17	.	.	.	9	7.vi.	.	8	1.vi.	.
Hada nana Hufn.	90	.	.	.	59	31.v.	.	31	11.vi.	.
Hadena suasa Schiff.	25	.	.	.	11	8.vi.	.	14	19.vi.	.
H.thalassina Hufn.	39	.	.	.	24	31.v.	.	15	14.vi.	.
H.trifolii Hufn.	1	.	.	.	.	.	.	1	8.vii	.
H.bombycina Hufn.	1	.	.	.	.	.	.	1	24.vi.	.
H.serena Schiff.	3	.	.	.	1	12.vi.	.	2	13.vi.	.
Hadena conspersa Schiff.	4	.	.	.	.	.	.	4	14.vi.	.
H.bicruris Hufn.	34	.	.	.	16	2.vi.	.	18	9.vi.	.
H.cucubali Schiff.	2	.	.	.	2	3.vi.	.	.	.	.
H.lepida Esp.	7	.	.	.	4	3.vi.	.	3	12.vi	15.vi.
Tholera aspitis Schiff.	1	1	.	17.ix.	.	.	.	.	.	.

Species	Total caught.	Autumn 1965.	First seen.	Last seen.	1966.	First seen.	Last seen.	Spring/ summer 1967.	First seen.	Last seen.
Episema caeruleocephala L.	193	129	25.ix.	26.x.	64	20.ix.	25.x.	.	.	.
Aporophila nigra Haw.	34	14	[illegible]	21.x.	20	.	13.x.	.	.	.
Brachyonycha sphinx Hufn.	1	1	25.x.	.	.	.	.	.	.	.
Eumichtis adusta Esp.	3	.	.	.	1	13.vi.	.	2	10.vi.	.
E.lichenea Hub.	1	.	.	.	1	23.ix.	.	.	.	.
Allophyes oxyacanthae L.	131	52	.	26.x.	79	.	20.x.	.	.	.
Griposia aprilina L.	6	3	22.ix.	25.x.	3	13.x.	22.x.	.	.	.
Euplexia lucipara L.	24	.	.	.	9	17.vi.	.	15	14.vi.	.
Phlogophora meticulosa L.	89	29	.	8.ix.	53	13.iii.	8.ix.	7	4.vi.	.
Apamea onscura Haw.	35	.	.	.	26	12.vi.	.	9	25.vi.	.
A.sordens Hufn.	44	.	.	.	17	6.vi.	.	27	4.vi.	.
A.crenata Hufn.	129	.	.	.	76	5.vi.	.	53	2.vi.	.
A.lithoxylea Schiff.	9	.	.	.	8	22.vi.	.	1	9.vii.	.
A.monoglypha Hufn.	369	2	.	20.ix.	250	22.vi.	.	117	24.vi.	.
A.characterea Hub.	1	.	.	.	1	29.vi.	.	.	.	.
A.secalis L.	6	.	.	.	1	12.vii.	.	5	26.vi.	.
Procus strigilis Cl.	118	.	.	.	53	23.vii.	.	65	13.vi.	.
P.latruncula Schiff.	71	.	.	.	42	25.vi.	.	29	16.vi.	.
P.fasciuncula Haw.	50	.	.	.	22	9.vi.	.	28	16.vi.	.
Hydraecia micacea Esp.	48	26	.	18.x.	22	.	8.x.	.	.	.
Gortyna flavago Schiff.	15	6	23.ix.	6.x.	9	18.ix.	10.x.	.	.	.
Nonagria typhae Thunb.	1	.	.	.	1	17.ix.	.	.	.	.
Arenostola pygmina Haw.	12	10	.	25.x.	2	22.ix.	22.ix	.	.	.
Leucania pallens L.	4	.	.	.	3	25.vi.	.	1	7.vii.	.
L.impura Hubn.	11	.	.	.	11	4.vii.	.	.	.	.
L.lithargyria Esp.	3	.	.	.	3	5.vii.	.	.	.	.
Meristis trigrammica Hufn.	10	.	.	.	4	10.vi.	17.vi.	6	18.vi.	.
Caradrina alsines Brahm.	15	.	.	.	12	3.vii.	.	3	9.vii.	.
C.blanda Schiff.	29	.	.	.	19	20.vi.	.	10	17.vi.	.
C.clavipalpis Scop.	12	3	.	25.x.	8	6.vi.	10.x.	1	7.vii.	.
Rusina umbratica Goeze.	30	.	.	.	17	2.vi.	1.vii	13	11.vi.	.
Amphipyra tragopogonis Cl.	22	7	.	27.ix.	15	.	26.ix.	.	.	.
Cerastis rubricosa Schiff.	26	.	.	.	7	15.iii.	10.v.	19	7.iii.	13.v.
Orthosia gothica L.	539	.	.	.	278	7.iii.	11.vi.	261	30.i.	7.vi.
O.miniosa Schiff.	1	.	.	.	1	25.iv	.	.	.	.
O.cruda Schiff.	21	.	.	.	13	13.iii	1.v.	8	.	10.v.
O.stabilis Schiff.	105	.	.	.	66	8.iii.	17.v.	39	7.iii.	5.v.
O.incerta Hufn.	169	.	.	.	105	10.iii.	31.v.	64	.	4.vi.
O.munda Schiff.	7	.	.	.	6	16.iii.	.	1	.	25.iv.
O.gracilis Schiff.	31	.	.	.	17	.	20.v.	14	.	17.v.
Agrochola lota Cl.	7	4	.	26.x.	3	.	6.x.	.	.	.
A.macilenta Hub.	51	17	21.ix.	26.x.	34	22.ix.	1.xi.	.	.	.
A.circellaris Hufn.	21	.	.	.	21	19.ix.	20.x.	.	.	.
Anchocelis helvola L.	3	3	22.ix.	5.x.	.	.	.	.	.	.
Tiliacea citrago L.	2	2	22.ix.	26.ix.	.	.	.	.	.	.
Citria lutea Ström.	3	1	19.ix.	.	2	26.ix.	28.ix.	.	.	.
Cirrhia icteritia Hufn.	3	.	.	.	3	.	21.ix.	.	.	.
C.gilvago Schiff.	14	3	27.ix.	4.x.	11	18.ix.	13.x.	.	.	.
Conistra vaccinii L.	7	1	14.x.	.	4	16.iii	19.x.	2	29.i.	7.ii.
C.ligula Esp.	10	3	24.ix.	5.x.	7	12.ii.	8.xi.	.	.	.
Eupsilia transversa Hufn.	2	.	.	.	2	7.x.	8.x.	.	.	.
Graptolitha ornitopus Hufn.	1	.	.	.	.	.	.	1	15.iii.	.
Xylocampa areola Esp.	21	.	.	.	15	15.iii.	16.v.	6	15.iii.	23.iv.
Xylena vetusta Hub.	1	1	7.xi.	.	.	.	.	.	.	.
Cucullia umbratica L.	10	.	.	.	7	9.vi.	.	3	26.vi	.
Rivula sericealis Scop.	2	.	.	.	2	8.vii.	.	.	.	.
Scoliopteryx libatrix L.	1	.	.	.	.	.	.	1	23.vi.	.
Polychrisia moneta Fab.	5	.	.	.	1	8.vii.	.	4	1.vii.	.
Plusia chrysitis L.	38	.	.	.	22	30.vi.	.	16	4.vii.	.
P.bractea Schiff.	1	.	.	.	1	7.vii.	.	.	.	.
P.festucae L.	2	.	.	.	.	.	.	2	6.vii.	.
P.gracilis Lempke	4	.	.	.	2	4.vii.	.	2	9.vii.	.
P.jota L.	29	.	.	.	19	9.ix.	.	10	30.vi.	.
P.pulchrina Haw.	94	.	.	.	46	9.vi.	.	48	13.vi.	.
P.gamma L.	373	14	5.x.	7.ix	357	2.v.	31.x.	2	24.vi.	.
Abrostola triplasia L.	10	.	.	.	4	25.vi.	.	6	26.vi.	.
A.tripartita Hufn.	58	.	.	.	29	5.vi.	.	29	5.vi.	.
Zanclognatha tarsipennalis Treits.	22	.	.	.	16	1.vii.	.	6	5.vii.	.
Z.grisealis Schiff.	3	.	.	.	1	9.vii.	.	2	26.vi.	.
Hypena proboscidalis L.	16	.	.	.	9	2.vii.	.	7	3.vii.	.
GEOMETRIDAE										
Pseudoterpna pruinata Hufn.	1	.	.	.	.	.	.	1	7.vii.	.
Geometra papilionaria L.	2	.	.	.	2	8.vii.	.	.	.	.
Sterrha aversata L.	69	.	.	.	55	3.vii.	.	14	25.vi.	.
S.biselata Hufn.	1	.	.	.	.	.	.	1	10.vii.	.
Ortholitha mucronata Scop.	2	.	.	.	1	5.vii.	.	1	18.vi.	.
Anaitis plagiata L.	3	.	.	.	1	10.vii.	.	2	5.vii.	.
Ecliptoptera silaceata Schiff.	5	.	.	.	2	.	23.ix.	3	2.vi.	19.vi.
Lygris mellinata Fab.	1	.	.	.	1	11.vii.	.	.	.	.
L.pyraliata Schiff.	18	.	.	.	15	7.vii.	.	3	4.vii.	.

Species	Total caught.	Autumn 1965.	First seen.	Last seen.	1966.	First seen.	Last seen.	Spring/ Summer 1967.	First seen.	Last seen.
Cidaria fulvata Forst.	17	.	.	.	14	2.vii.	.	3	6.vii	.
Electrophaëa corylata Thunb.	10	.	.	.	6	1.vi.	14.vi.	4	5.vi.	15.vi.
Dysstroma truncata Hufn.	110	39	.	17.x.	44	2.vi.	10.x.	27	2.vi.	26.vi.
Lampropteryx suffumata Schiff.	4	.	.	.	3	1.v.	26.v.	2	25.iv.	11.v.
Chloroclysta miata L.	14	7	22.ix.	26.x.	7	7.x.	30.x.	.	.	.
Thera obeliscata Hubn.	12	4	.	24.ix.	4	.	14.x.	4	2.vi.	.
T.variata Schiff.	15	.	.	.	12	6.vi.	28.ix.	3	25.v.	15.vi.
Xanthorhoe ferrugata Cl.	6	.	.	.	6	25.v.	8.vi.	.	.	.
X.designata Hufn.	16	.	.	.	7	14.v.	9.vii	9	10.v.	5.vii
X.montanata Schiff.	101	2	.	5.x.	53	31.v.	.	46	2.vi.	.
X.fluctuata L.	58	1	.	16.ix.	30	17.iii.	25.ix.	27	16.v.	.
Epirrhoë alternata Müll.	8	.	.	.	4	3.vi.	16.vi.	4	4.vi.	.
Colostygia pectinataria Knoch.	1	.	.	.	.	.	.	1	11.vii	.
C.multistrigaria Haw.	3	.	.	.	.	.	.	3	28.iv.	28.iv.
Entephria caesiata Schiff.	1	.	.	.	.	.	.	1	11.vii	.
Earophila badiata Schiff.	2	.	.	.	1	16.iii.	.	1	12.v.	.
Coenotephria derivata Schiff.	8	.	.	.	6	.	16.v.	2	21.iv.	28.iv.
Perizoma affinitata Steph.	2	.	.	.	1	1.vii.	.	1	23.vi.	.
P.alchemillata L.	16	.	.	.	3	2.vii.	.	13	26.vi.	.
P.flavofasciata Thunb.	15	.	.	.	10	2.vii.	.	5	3.vi.	.
P.blandiata Schiff.	5	.	.	.	.	.	.	5	19.vi.	.
Hydriomena furcata Thunb.	2	.	.	.	2	12.vii.	22.ix.	.	.	.
H.coerulata Fab.	3	.	.	.	1	12.vi.	.	2	31.v.	19.vi.
Asthena albulata Hufn.	1	.	.	.	1	3.vi	.	.	.	.
Operophtera brumata L.	1	1	26.xi.	.	.	.	.	.	.	.
Oporinia dilutata Schiff.	102	90	5.x.	10.xi.	9	7.x.	25.x.	.	.	.
O.christyi Prout					3	30.x.	2.xi.	.	.	.
O.autumnata Borkh.	13	12	19.x.	26.x.	1	15.x.	.	.	.	.
Eupithecia pulchellata Steph.	68	.	.	.	35	6.vi.	.	33	1.vi.	.
E.tantillaria Boisd.	1	.	.	.	.	.	.	1	14.vi.	.
E.assimilata Doubld.	4	.	.	.	2	?	?	2	5.vii.	.
E.vulgata Haw.	41	.	.	.	18	2.vi.	.	23	2.vi.	25.vi.
E.castigata Hubn.	5	.	.	.	1	29.vi.	.	4	9.vi.	.
E.icterata Vill.	1	.	.	.	1	8.vii.	.	.	.	.
E.innotata Hufn.	5	.	.	.	1	1.vii.	.	4	27.iv.	.
E.nanata Hb.	2	.	.	.	.	.	.	2	24.vi.	.
E.exiguata Hubn.	14	.	.	.	.	.	.	14	4.vi.	10.vii.
Chloroclystis coronata Hubn.	6	.	.	.	4	14.v.	.	2	28.iv.	28.iv.
C.rectangulata L.	17	.	.	.	9	2.vi.	.	8	21.vi.	.
Orthonama lignata Hubn.	1	.	.	.	.	.	.	1	19.vi.	.
Lomaspilis marginata L.	3	.	.	.	1	5.vii.	.	2	23.vi.	.
Ligdia adustata Schiff.	1	.	.	.	.	.	.	1	16.vi.	.
Bapta temerata Schiff.	16	.	.	.	7	7.vi.	.	9	15.vi.	.
Cabera pusaria L.	13	.	.	.	4	1.vii.	.	9	14.vi.	.
C.exanthemata Scop.	1	.	.	.	1	13.vii.	.	.	.	.
Plagodis dolabraria L.	3	.	.	.	1	3.vi.	.	2	15.vi.	.
Anagoga pulveraria L.	4	.	.	.	2	2.vi.	8.vi.	2	13.vi.	15.vi.
Ellopia fasciaria Schiff.	2	.	.	.	.	.	.	2	8.vii.	.
Campaea margaritata L.	11	.	.	.	7	1.vii.	.	4	23.vi.	.
Deuteronomos alniaria L.	10	7	18.ix	6.x.	3	23.ix.	30.ix.	.	.	.
D.erosaria Schiff.	6	1	20.ix.	.	5	.	30.ix.	.	.	.
Selenia bilunaria Esp.	22	.	.	.	13	1.v.	3.v.	9	.	10.v.
S.lunaria Schiff.	6	.	.	.	2	2.vi.	8.vi.	4	11.vi.	19.vi.
Gonodontis bidentata Cl.	7	.	.	.	4	18.x.	8.vi.	3	10.v.	10.vi.
Colotois pennaria L.	43	39	5.x.	8.xi.	4	20.x.	30.x.	.	.	.
Ouropteryx sambucaria L.	5	.	.	.	4	30.vi.	.	1	7.vii.	.
Opisthograptis luteolata L.	149	.	.	.	71	23.v.	.	78	2.vi.	.
Lithina chlorosata Scop.	10	.	.	.	5	2.vi.	16.vi.	5	2.vi.	16.vi.
Semiothesa alternata Schiff.	1	.	.	.	.	.	.	1	4.vii.	.
Itama wauaria L.	2	.	.	.	2	9.vii.	.	.	.	.
Chiasmia clathrata L.	1	.	.	.	.	.	.	1	11.vii.	.
Theria ruficaparia Schiff.	11	.	.	.	7	12.i.	16.iii.	4	4.ii.	9.ii.
Erannis aurantiaria Hubn.	3	2	21.x.	11.xi.	1	25.xi.	.	.	.	.
E.marginaria Fab.	5	.	.	.	5	21.ii.	16.iii.	.	.	.
E.defoliaria Cl.	19	17	5.x.	12.xi.	2	15.x.	14.xi.	.	.	.
Alsophila aescularia Schiff.	31	.	.	.	24	20.ii.	29.iv.	7	9.ii.	24.iv.
Phigalia pedaria Fab.	13	.	.	.	8	26.i.	2.iii	5	4.ii.	6.ii.
Apocheima hispidaria Schiff.	1	.	.	.	.	.	.	1	7.iii.	.
Biston strataria Hufn.	7	.	.	.	5	14.iii.	.	2	8.ii.	16.iv.
Biston betularia L.	86	.	.	.	33	16.v.	.	53	7.vi.	.
Hemerophila abruptaria Thunb.	3	.	.	.	2	16.v.	6.vi.	1	10.v.	.
Alcis rhomboidaria Schiff.	12	.	.	.	2	3.vii.	.	10	19.vi.	.
A.repandata L.	20	.	.	.	14	30.vi.	.	6	25.vi.	.
Ectropis bistortata Goeze	3	.	.	.	3	26.v.	.	.	.	.
E.crepuscularia Hubn.	1	.	.	.	.	.	.	1	6.v.	.
Aethalura punctulata Schiff.	1	.	.	.	1	1.vi.	.	.	.	.
Bupalus piniaria L.	5	.	.	.	.	.	.	5	2.vi.	.
HEPIALIDAE:										
Hepialus humuli L.	19	.	.	.	5	17.vi.	.	14	15.vi.	.
H.fusconebulosa Deg.	14	.	.	.	10	18.vi.	.	4	18.vi.	.
H.lupulina L.	1	.	.	.	1	7.vi.	.	.	.	.
H.hecta L.	6	.	.	.	6	31.v.	.	.	.	.

In addition to the species listed, I have a specimen of what appears to be definitely *Diarsia florida* Schmidt. The specimen was taken on 31.v.1967, and this is a very curious date if it is *florida*. However, the moth is outstandingly brighter and slightly larger than the *rubi* at Heversham of which I have a long series; consequently I think it must be *florida* and hence the total number of species trapped at Heversham is increased to 233.

The following species were verified as occurring within a four-mile radius of the school but were never caught in the trap.

Odontosia carmelita Esp. N.L.B. gave me a specimen bred from a larva taken in Brigsteer Woods.

Pterostoma palpina Cl. Taken at Witherslack on 16.vi.1966.

Lasiocampa quercus L. var. *callunae* Palmer 2♂♂, 1♀, taken on Meathop Moss, 2.vii.1967.

Parasemia plantaginis L. One at Meathop on 2.vii.1967.

Apatele menyanthidis View. One on a pine trunk on Meathop on 2.vii.1966.

Anarta myrtilli L. Common on Meathop in late June.

Panemeria tenebrata Scop. One at Heversham on 15.v.1966.

Sterrha muricata Hufn. Two at Meathop on 29.vi.1966.

S. subsericeata Haw. Quite common at Meathop in early July.

Scopula ternata Schr. Several jarred from birch at Meathop on 10.vi.1967.

Eulype hastata L. One at Meathop on 10.vi.1967.

Euchoeca nebulata Scop. One on 18.vi.1967 in a wood 1000 yards west of Heversham.

Operophtera fagata Scharf. Common in woods on the Kent estuary in late November 1966.

Abraxas grossulariata L. Larvae very common on hawthorn hedges in July 1965.

Bapta bimaculata Fab. One jarred from birch at Meathop on 10.vi.1967.

Apeira syringaria L. One at Witherslack on 30.vi.1966.

Ematurga atomaria L. Common at Meathop in June and July.

Perconia strigillaria Hübn. Common at Meathop in June and July.

MICROLEPIDOPTERA:

The following is a list of species taken at Heversham and on Meathop Moss. Species found only at Meathop are indicated by the locality's name in brackets. The nomenclature and order of species is Heslop's.

PYRALOIDEA

SCOPARIINAE:

975 *Eudorea lineola* Curt.
976 *E. angustea* Steph.
978 *E. murana* Curt.
980 *Dipleurina crataegella* Hübn.
984 *Scoparia dubitalis* Hübn.
986 *S. ambigualis* Treits.

NYMPHULINAE:

996 *Eurrhypara hortulata* L.

PYRAUSTINAE:

1001 *Nomophila noctuella* Schiff.
1021 *Opsibotys fuscalis* Schiff.
1019 *Udea olivalis* Schiff.
1024 *Mesographe forficalis* L.

PHYCITINAE:

1061 *Laodamia fusca* Haw.
1066 *Nephopteryx palumbella* F. (Meathop)
1073 *Salebria betulae* Deg. (Meathop)

GALLERIINAE:

1116 *Aphomia sociella* L.

CRAMBINAE:

1120 *Crambus pascuellus* L.
1126 *C. pratellus* L.
1127 *C. perlellus* Scop.
1128 *C. hortuellus* Hübn.
1133 *Cataptria falsellus* Schiff.
1143 *Agriphila tristellus* Schiff.

PLATYPTILIINAE

1175 *Platyptilia gonodactyla* Schiff.

PTEROPHORIINAE:

1179 *Pterophorus pentadactylus* L.
1191 *Oidaematophorus tephradactylus* Hübn.

ALUCITINAE:

1194 *Alucita hexadactyla* L.

TORTRICOIDEA

PHALONIINAE

1241 *Stenodes straminea* Haw.

ARCHIPINAE:

1246 *Pandemis cerasana* Hübn.
1252 *Archips oporana* L.
1256 *Archips rosana* L.
1259 *Syndemis musculana* Hübn. (Meathop)
1263 *Amelia paleana* Hübn.
1266 *Clepsis consimilana* Hübn..
1269 *Ptycholoma lecheana* L.
1270 *Lozotaenia forsterana* F.
1278 *Batodes angustiorana* Haw.
1278 *Batodes angustiorana* Haw.

CNEPHASIINAE:

1279 *Pseudargyrotoza conwayana* F.
1282 *Eulia ministrana* L.
1289 *Cnephasia communana* H.-S.
1290 *C. interjecta* Haw.
1294 *Tortricodes tortricella* Hübn.

TORTRICINAE:

1303 *Tortrix viridana* L.

ACLERINAE:

1305 *Croesia bergmanniana* L.
1316 *Acleris variegana* Schiff.
1321 *A. sponsana* Schiff.
1322 *A. hastiana* L.
1332 *A. rhombana* Schiff.

LASPEYRESIINAE:

1351 *Laspeyresia succedana* Schiff.

ENCOSMINAE:

1419 *Eucosma hohenwartiana* Schiff.
1422 *E. cana* Haw.
1444 *Pardia cynosbatella* L.
1445 *Notocelia uddmanniana* L.
1447 *N. rosaecolana* Doubl.

OLETHREUTINAE:

1532 *Endothenia antiquana* Hübn.
1537 *Apotomis capreana* Hübn.
1543 *Orthotaenia undulana* Schiff.
1544 *Hedya nubiferana* Haw.
1556 *Olethreutes schulziana* Fab. (Meathop)
1565 *Celypha striana* Schiff.

TINEOIDEA

GELECHIINAE:

1616 *Telphusa proximella* Hübn.
1645 *Neofaculta betulae* Haw. (Meathop)

COSMOPTERYGINAE:

1738 *Mompha decorella* Steph.

OECOPHORINAE:

1753 *Dasycera sulphurella* Fabr.
1761 *Endrosis sarcitrella* L.
1772 *Hofmannophila pseudospretella* Stt.

PHILOBOTINAE:

1778 *Pleurota bicostella* Cl.

DEPRESSARIINAE:

1787 *Depressaria heracliana* Deg.
1799 *Agonopterix costosa* Haw.
1808 *A. arenella* Schiff.
1816 *A. angelicella* Hübn.
1820 *A. applana* Fab.
1823 *A. ocellana* Fab.
1829 *Eipgraphia steinkellneriana* Schiff.

CHOREUTINAE:

1847 *Anthophila fabriciana* L.

YPONOMEUTIDAE:

1954 *Yponomeuta padella* L.

CALOPTILIINAE:

2142 *Caloptilia syringella* Fab.

PLUTELLINAE:

2165 *Ypsolophus xylostellus* L.
2175 *Y. sequellus* Cl.
2177 *Anadetia porrectella* L.
2178 *Plutella maculipennis* Curt.

TINEINAE:

2229 *Monopis rusticella* Hübn.
2249 *Tinea trinotella* Thunb.

LAMPRONIINAE:

2277 *Incurvaria masculella* Schiff.

ADELINAE:

2296 *Nemophora swammerdamella* L. (Meathop)

Discussion of Certain Species:

(i) The exclusive oak feeders, e.g. *C. ruficornis*. These were only rarely encountered for there are only six oak trees within a half-mile radius of the trap. Of these species, the most surprising was *G. ornitopus*. This was a new county record, but it can only be attributed to pure chance: if *ornitopus* has never been taken among the oaks at Witherslack, then it is hardly likely to establish a breeding population in the scattered trees around Heversham.

(ii) *D. sannio, C. mesomella* and *L. varia* were all strays from Meathop Moss (the nearest breeding ground) three miles across the Kent estuary.

(iii) *C. perla*: The larvae of this species were found rolled in the leaves of a silver birch in the school grounds. I collected half a dozen and they ate the birch leaves, finally pupating in cotton wool. I obtained three imagines, two a little darker than the typical. This appears to be a most unusual situation.

(iv) *H. nana*: On 11th June 1967 I caught a specimen bearing a dot of red paint on the underside of the left hindwing. This, I think, could only be the result of a marking experiment, but no one has yet laid claim to this specimen.

(v) *E. lichenea*: A confirmed sand-hill addict, this species will evidently move way out of its breeding ground on suitable nights. Vine-Hall once caught a pair on the same night at Old Hutton, in south Westmorland. It may possibly breed on the Kent estuary, but has not been recorded as doing so.

(vi) *H. bombycina*. The nearest breeding area of this lone ranger would be Helsington, about four miles away.

(vii) Specimens of *Procus* spp. were all killed and the genitalia examined. *P. versicolor* Borkh. was absent.

(viii) *N. typhae*: The nearest colony is on a stretch of the Lancaster-Kendal canal at Stainton, two and a quarter miles north of the trap.

(ix) *A. circellaris*: Why this species was not seen in 1965, I cannot fathom.

(x) *S. libatrix*: A rare beast in Westmorland: this odd specimen was freshly emerged and its date of emergence is most curious.

(xi) *P. festucae* and *P. gracilis*: Great interest has been shown in these species and Dr. N. L. Birkett has already published my 1966 records of *gracilis* on 4th and 8th July, 1967 produced *gracilis* on 9th and 10th July, and *festucae* on 6th and 7th. Lempke's biotype for *gracilis* fits in with the Heversham situation very well.

(xii) *S. aversata*. In 1967, two of the specimens were of the banded typical form: I have no details for the 1966 catches.

(xiii) *T. variata, E. tantillaria* and *E. fasciaria,* all spruce feeders, must have come from a group of six Norway spruces in the school grounds, or from much farther afield: there are very few other conifers in the vicinity.

(xiv) *Oporinia* and *Operophtera* species were checked by examination of genitalia.

(xv) *S. alternata.* I know of no other Westmorland record of this species.

(xvi) *A. hispidaria.* There are few Westmorland records of this species; I believe it is occasionally found in woodland near Windermere.

(xvii) *B. betularia.* The percentage of the *carbonaria* form of this species in the two year sample was 57 per cent. *Insularia* were not recorded as it is very difficult to assess where this form begins and ends.

(to be concluded)

Mainly About Butterflies

By H. Symes.

The recent scarcity of butterflies that has become obvious to country-lovers with no special interest in entomology has been attracting some attention in the national newspapers. "The Observer" of 20th August carried an article that filled half a page by Professor E. N. Willmer, F.R.S., entitled "Where have all the Butterflies gone?" Visiting some old haunts in Wales last year, he noticed the almost complete absence of such common species as the common blue, small copper, small heath, wall butterfly, grayling, and even the meadow brown.

The professor put forward seven possible causes, all of which contribute in a degree that varies with different localities towards the same result. Dr. Maurice Burton ("Daily Telegraph," 29th July), in a note on the "Dearth of Butterflies," refers to "the present policy of using machines to shave the verges and even the banks beyond" along country roads. I referred to the destruction of these grass verges in an article two years ago (*Ent. Rec.,* **77**: 272). Since then, things have become worse, and when driving along country roads one frequently sees one of these infernal contraptions doing its dirty work, and sometimes finds traffic held up by it in country lanes.

Although this has been a fine summer, the best since 1959, I have not found it a good one for butterifles, and have heard this confirmed by other observers. It has been especially true with regard to butterflies in my garden, particularly the Vanessids. Last year, red admirals were very plentiful, and there was a large invasion of painted ladies. This year, red admirals have been scarce, though less so than in 1965, and I have not seen a painted lady. There seem to have been very few immgirants, and this applies also to two species of moths, the humming bird hawk, and the usually abundant silver Y. I have seen very few of the latter, and none of the former. My general impression about butterflies is that they may still be seen in good numbers in certain favoured localities (now unfortunately becoming fewer) but in the countryside as a whole they are very scarce.

My season opened on 3rd April with the capture of a pine beauty (*Panolis flammea* Schiff.) in the daytime on a lamp-post (new-style) in a

main road. I have twice taken this species at sallow in my garden, and once in Meyrick Park, where I believe it breeds. I saw my first butterflies, a small white (*Pieris rapae* L.) and a small tortoiseshell (*Aglais urticae* L.) in the garden on 14th April, and three days later a large white (*Pieris brassicae* L.). Three red admirals (*Vanessa atalanta* L.) were seen near Ringwood on 9th May. I drove to Upwey on 9th June to spend the week-end with Brigadier and Mrs. Warry. It was too cold that night for moths to visit the MV light in any numbers, and only twelve species turned up, none of them of any particular interest. Next day was fine, and we visited a favourite locality in the Dale country, where we saw twelve species of butterflies. Of these, the marsh fritillary (*Euphydryas aurinia* Rott.) was much scarcer than usual, and the small pearl bordered (*Argynnis selene* Schiff.) was in fair numbers and fine condition. Both sexes of the brimstone (*Gonepteryx rhamni* L.) appeared, and this was the only time this year that I have seen this butterfly. On 11th June, we were taken to one of the Dorset Naturalists' Trust's reserves, and had a wonderful day. We found the wood white (*Leptidea sinapis* L.) well established, and watched the females visiting their food plants with a view, we hoped, to laying their eggs. There was also a colony of *E. aurinia.* Many interesting plants were seen, including a butterfly orchid, and a buzzard was circling overhead. Altogether it was the most enjoyable experience I have had this year.

During the rest of June I had little to report, but on 27th I saw a red admiral in the garden. It was in good condition and I wondered whether it was an immigrant or British bred. A visit to Hod Hill with members of the Dorset Naturalists' Trust (I believe eighty of them turned out) on 8th July produced little of interest to lepidopterists, as it was a very windy day and between seasons for the most attractive local butterflies, of which only the marbled white (*Melanargia galatea* L.), newly emerged, was at all plentiful. I examined many posts without finding a moth of any sort. But the botanists had a good day: the frog orchid was in profusion, and there were plenty of the more decorative bee orchids, while there was a buzzard to cheer the ornithologists. On 18th July I met Brigadier Warry and Mr. Parmenter at Morden Heath. Unfortunately it was the only rainy day in a fine spell, and a drizzle persisted throughout our visit. Naturally it was no day for butterflies, but a few silver studded blues (*Plebejus argus* L.) were seen. On 23rd July, I saw a comma (*Polygonia c-album* L.), the pale form, in the garden. The buddleias came out early this year and the flower spikes were unusually fine. On 28th July I saw a red admiral on one.

In August, when Vanessids had been so numerous last year, I saw a peacock (*Nymphalis io* L.) on four days, a red admiral on three, and a small tortoiseshell on six, all singletons except two *urticae* on 30th August. In September I saw *N. io* on two days, *V. atalanta* on six and *A. urticae* on four (all singletons). *P. c-album* appeared once (19th September). Besides the two whites, another butterfly that I saw in the garden was the speckled wood (*Pararge egeria* L.), which appeared on 2nd and 13th June, 26th August and 4th September. But the greatest surprise was the capture in the garden of a *Colias croceus* Fourcr. var. *helice* on 13th September, especially as I had not seen any typical clouded yellows this year. This was a strange case of history repeating itself as on 14th October 1959 I took a *helice* in my garden without seeing a single *croceus* that year. I have since heard that one or two *croceus* have been

seen in the Bournemouth district lately, and it has been reported from Hod Hill and Portland. The whites (*Pieris brassicae* and *P. rapae* L.) have been at least as plentiful as usual. I suppose no one sprays their food with insecticides.

As for moths, one species that has been as abundant as ever is the angle shades (*Phlogophora meticulosa* L.). I saw two on 18th April, one on 19th and one on 21st, all sitting on low walls and I think, newly emerged: one had not finished drying its wings. There was a larger emergence in September: one on 9th, seven on 11th, one on 18th and three on 30th. A pale tussock (*Dasychira pudibunda* L.) was seen on a tree trunk in the garden on 19th May, and a full-fed larva in the road outside on 30th September. But there has been a remarkable scarcity of larvae in general, even of such a common species as the buff tip (*Phalera bucephala* L.). Masses of these larvae used to be seen in Bournemouth, chiefly on lime and birch: I have seen them even on holm oak, (*Quercus ilex*). But this year I have not seen one here, nor have I found the larva of any hawk moth. I saw an *Apatele psi* L. (grey dagger) larva, conspicuous on a purple prunus in a neighbour's garden (21st July) and an *A. tridens* Schiff. (dark dagger) on hawthorn, very well hidden at the bottom of a hedge where I was picking blackberries near Ringwood on 20th September. A week later Mr. Scarsdale Brown took me to the New Forest and in about two hours I saw more larvae than I had during the whole summer. There were three *P. bucephala*, two *A. psi*, and one each of *Lophopteryx capucina* L. (Coxcomb prominent), *Drepana lacertinaria* L. (Scalloped hooktip) and *Philudoria potatori* L. This was the most beautiful drinker larva that I have ever seen. It was at least an inch long (large for the time of year) and of a uniform bright golden colour, contrasting with the dark green bracken on which it was sitting. The only butterflies that we saw were a few *P. egeria*.

The Dingle Peninsula, 1967

By H. C. Huggins, F.R.E.S.

As usual I decided to spend my summer holiday in Ireland. This part of Essex, owing to "development" has now become distasteful to me in the summer, though I fear, from the growth of caravan sites and bungalows, that in twenty years' time, Ireland may be the same. However, that will not matter to me as I shall then be like Heraclitus, "a handful of grey ashes, long long ago at rest" though all our local nightingales have packed up in the past twelve years.

I had four particular objectives in 1967 besides my usual general potter round, the mountain *Crambus pratellus* L., the status of *C. selasellus* ab. *brunnea* Huggins, the August sandhill form of *Procus furuncula* Schiff., and *Luperina nickerlii* subspecies *knilli* Boursin.

I have already dealt with the first two in a note I sent to the editor from Dingle (Ent. Rec. **79**: 256).

I regret to say the weather was not good, on an average during the three months I was away, it was the worst I have spent in Ireland since 1948. In that year Mr. and Mrs. Dennis Smith, my wife and myself spent a long holiday at Glengarriff, and during the five weeks my wife and I were there, we did not have a day without rain, possibly the reason why

Dennis has not revisited Ireland. I had two good weeks from June 7th onwards, one in mid July and twelve days from August 19th to 31st. These last, however, were balanced by the biggest gale I have ever known, the one Robin Mere and I experienced on Tresco in 1957, said to be the tail end of a hurricane from the Azores, was not nearly as bad. It began on the night of September 2nd and luckily blew itself out by September 5th, as I was not looking forward to the Cork-Fishguard journey on September 6th.

Migrants were the fewest I have known in Ireland since 1947, a few *Plusia gamma L.* and *Nomophila noctuella* Schiff. being all I saw until August 24th, when there was a worn *Laphygma exigua* Hübn. in the trap at Inch, to be followed by another on September 1st.

Nickerlii came up to expectations. I went to Inch on August 19th to make certain of a series, but before that, on August 9th, I took a perfect male in my trap at Dingle, thus adding some twenty miles to the then recorded range. In the previous year I had suspected it would be found elsewhere, Dunshean Cove, about four miles from Dingle, looking particularly favourable, but as I have not a car or a generator, I was unable to test this. Shortly after my capture, it was found by other collectors even further from Inch and I have little doubt it is found in suitable places all round the Dingle peninsula and probably the Kenmare one also. Apropos of these localities it seems a great pity the moth was called the sandhill rustic. It has nothing to do with sandhills but is a cliff frequenting insect, particularly the loose rubble at the foot: the foreshore at the front may be pebble beach, sandhills, or mud indifferently. As there is at present no law of priority with English names I suggest it be changed at once.

I took a nice series at Inch, it varies somewhat and I was lucky enough to get one of the lighter mottled ones like a dark grey s. sp. *gueneei* Doubled., a form which is decidedly uncommon.

I found the *furuncula* even more interesting. It does not look in the least like the usual variable insect, but is like a large male *Petilampa minima* Haw. It appears to emerge at least a fortnight later than the normal race and to be the only one found in its localities. So far as I can ascertain its haunts are all sandhills, Inch, Castlegregory, and Brandon Bay being known to me, I suspect it will be found in other places, probably Smerwick and Ventry. When absolutely fresh it is a light drab, but this fades in a day or so to a creamish buff. It was first found at Inch by Messrs Robin Mere and E. Pelham-Clinton. Further work on its distribution, and more particularly whether it co-exists anywhere with the normal variable race would be of interest. The female is exactly like the male.

The insect that pleased me most, however, was the Mount Brandon race of *Xanthorhoe montanata* Borkh. Montanata is found at all levels, although patchily, in the Brandon range. The finest mountain race, however, appears to live at 2500 feet and upwards, I could not penetrate higher than 2600 feet. So far as I can gather, the true mountain race has not previously been taken except by Kane and Donovan. Mr. E. S. A. Baynes has taken some intermediates at Killarney but after seeing my Brandon ones he said mine were more extreme, moreover, he characterises his as a rather small race; mine are quite as big as any of the woodland or hedgerow forms. In some cases the Brandon ones

have their forewings of uniform yellowish brown with the central band defined by white bands, the central band being no darker than the rest of the wing.

Donovan criticises Kane for referring a number of his insects to ab. *shetlandica* Weir and says the Brandon ones correspond to ab. *iberica* Staud. from Castile and Andalusia. The Irish ones are very variable but I think Donovan is probably right; I do not know the ab. *iberica*, but my ab. *shetlandica* from Unst are whiter with a much darker central band, and very much smaller than my Brandon ones.

It was again with much pleasure that I noted the curious habits of these mountain moths. On the ground level *montanata* when beaten out flies along to another bush in the hedge. On these mountain heights, it lives in clumps of sheep-nibbled heather and when disturbed the male goes up fifteen or twenty feet like *Anaitis plagiata* L. and then flutters slowly down, perhaps twenty yards away. It is therefore not very easy to catch on this rough ground, especially as there is almost always a breeze at the tops. The moth does not fly except in clear weather and without the slightest breeze the higher slopes are always wrapped in cloud or mist. I only had three days suitable for catching it whilst the moth was on the wing and as they were consecutive after the first two, I had to take a rest.

I never saw the female fly, on a warm day she appeared to sit on a heather cushion, and may be boxed without much difficulty, although I always put a net over her for luck.

Other items of possible interest are: *Laothoe populi* L. A perfect newly emerged male at Inch on September 1st, suggesting that the moth is partially double brooded in Southern Ireland. *Pheosia tremula* Clerck, Dingle, June 10th and 11th; Inch, August 23rd. Not recorded for Kerry by Mr. Baynes. *Notodonta ziczac* L., two specimens of the beautiful light form at Dingle. *Lithosia quadra* L., a very large male (immigrant?) on the window of a bar in Strand Street, Dingle, on August 17th. Rare moths in Ireland seem to be fond of bar windows, the first *Cryphia muralis* ab. similis C. and W. I ever found was on a bar window in Patrick Street, Cork.

Spilosoma lubricipeda L. There were several this year in the trap with heavy spotting in bars on the forewings like the Scilly ones; I have only seen one or two of these before at Dingle.

Euxoa cursoria Hufn. Two females at Inch both interesting. One a light specimen with the bead-like markings very pronounced; the other the darkest brown I have ever seen.

Agrotis trux ssp. *lunigera* Steph. Quite common at Dingle and one or two in late August at Inch. Usually rare in the town.

Diarsia rubi View. Several melanic of the first brood found at Dingle, though not so dark as the second. As I have previously pointed out, the second brood specimens are much larger than the English ones, both at Dingle and in the Burren, but by careful comparison, I find the first brood ones are the same size.

Amathes xanthographa Schiff. I took my first at Dingle on June 13th and it was still emerging at Inch at the end of August.

Euschesis comes Hübn. A specimen with nearly black forewings at Dingle on August 10th.

Mamestra brassicae L. The very small race turned up again at Dingle after three years' absence.

Ceramica pisi L. A few with purple-black forewings at Dingle.

Hadena lepida s. sp. *capsophila* Dup. The partial second brood appeared at Inch in the last week of August, two *obsolescens* Richardson.

Cryphia muralis Forst. Very scarce at Dingle in 1967, probably because Mr. Baynes made a special trip to get it! However, amongst his seven was one of the very rare ab. *nigra* Huggins.

Apatele euphorbiae s. sp. *myricae* Guen. A very fine male of the dark form at Inch, 20.viii.1967; unhappily no others arrived in the next ten days.

Apamea sordens Hufn. A few specimens of a deep olive-grey colour I have not seen before at Dingle. I set a couple.

Euplexia lucipara L. appeared to be much more black and white than in England (i.e., blackish brown and pale yellow cream).

Celaena leucostigma Hübn. Two at Dingle, two at Inch. All of the small dark Irish form, and all *fibrosa;* I have not yet taken the type form in Ireland.

Hydraecia crinanensis Burrows. Very common at Inch. As it was not occurring freely at the locality Messrs Fairclough and Coxey were working I invited them to come and collect mine on the morning of August 31st. There were three. They had to leave the next morning early so could not do a repeat visit. There were 67, besides some on the grass. Evidently Irish moths!

Unca trigemina Wernb. In 1966 I found a larva unknown to me on a bit of waste ground in Strand Street. The moth emerged in July 1967 as above. The usual colour is green, and South says there is a purple-brown form, but this one was dark greyish-black.

Colostygia salicata Hüb. A small dark female at Inch on August 27th. In Cork and Kerry I have always found this moth at least 400 feet above sea-level, though it comes right down to the sea in the Burren.

Eupithecia expallidata Doubl. One worn, at Dingle on June 14th. I believe new to Kerry.

Ematurga atomaria L. Common on June 12th at 2500 feet on Mount Brandon. All the males were of a white ground colour.

Biston betularia L. A male with very melanic forewings at Dingle on June 11th; usually Dingle specimens are very white.

Hepialus lupulina L. Very common at Dingle; usually considered scarce in Ireland.

Eudoria resinea Haw. Two, one much worn, turned up again at Dingle after being absent since 1963.

Scoparia ambigualis Treits I took a specimen at about 2000 feet on the Brandon range. To my surprise, it was rather larger than my English low-ground one,. and the ground colour was very light and markings dark and distinct. I should have expected a small dusky one like the s. sp. *atomalis* Doubl.

Pempelia dilutella Hübn. The usual form of this moth at Dingle is a magnificent crimson insect with large white spots, as big as, and sometimes bigger than *P. ornatella* Schiff. It is unfortunately rare. On July 10th, however, I took a miserable little greyish-brown specimen exactly like those I used to take on the North Downs. It was quite perfect.

Crambus selasellus Hübn. I have already (Ent. Rec. **79**: 256) dealt with this month and the status of ab. *brunnea* Huggins. However, after I had

posted the note to the Editor from Dingle, I took one on August 22nd at Inch, and the following day found the bit of salt-marsh whence it had come. The months were mostly worn, but all typical.

Oidematophorus tephradactylus Treits. I caught two specimens amongst golden rod in early June; they were both, though perfect, very pale in colour, with hardly any of the sprinkling of dark dots found in the Kentish specimens. I remember seeing this moth at Glengarriff in 1948, but unfortunately did not look at it closely.

Phalonia pallidana Zell. The larva was not uncommon in heads of *Jasione montana* throughout the district. Curiously enough I have never seen the moth flying.

Tortrix rusticana Treits. One, Brandon range at 2300 feet; normal.

T. musculana Hübn. Several the same day and height. An unlikely locality for this wood and hedgerow moth, but the same applies to *X. montanata.*

Ancylis unguicella L. One, Brandon range, 2500 feet, quite typical.

Argyroploce schulziana Fab. About 2500 feet in the Brandon range. Several, dating from mid-June to mid-July; very large.

A Review of the Status of certain Scarabaeoidea (Col.) in the British Fauna; with the addition to our List of *Onthophagus similis* Scriba

By A. A. Allen, B.Sc., A.R.C.S.

(*continued from p. 262*)

Stephens (1830: 227) only succeeds in adding to the confusion. In the first place, Morley points out (*l.c.*) that his figure of *A. agricola* (pl. xix, fig. 1) is 'utterly incompatible' with Donovan's, and appears to represent *Anomala donovani* Marsh. (later found by Arrow to be identical with the North American *A. irrorata* Blanch.); and that Westwood, who executed it, considered *S. agricola* auct. Brit. to be *Anisoplia austriaca* Hbst., which however is another East European species. Furthermore, Stephens's description does not agree with Donovan's *agricola* and is altogether more like that of the *Anomala* just mentioned. And secondly, Stephens writes of his *agricola*: 'A rare insect in Britain: all the known examples have been found, I believe, on the coasts of South Wales'; and cites the original capture. As to which Morley pertinently inquires, 'Who discovered these plural examples and what is become of them?'. As he points out, *Anomala donovani* Marsh.—also taken by Donovan on the Welsh coast, but at Newton Nottage, Glam. (two specimens on the sandhills)—is 'entirely distinct'. It appears that Stephens, though he gives both species, has gone astray over the *Anisoplia* through having apparently had before him in its stead the *Anomala*,[13] and both his description and figure of the former must be discounted. From the appendix to the volume in question (p. 373), it further transpires that the abdomen and elytra of this insect (?) were once found on the sea-shore at South Shields —probably a casual importation in ships' ballast or the like. In the Manual (1839: 169) the locality appears as Newcastle.

[13]Or more likely—to judge from what discrepancies there are—only the coloured figure of it.

I have discussed this vexed question at some length, partly as an example of the sort of difficulties which too often beset the evaluation of ancient records. In the present context it is of little more than academic interest. For what it is worth, my own feeling is that Donovan's *Anisoplia*, whether or not it was the species cited at the head of this note, was an alien—perhaps non-European like his *Anomala* from the same part of the country; and that Stephens's 'plural examples' were the outcome of some misconception or other. There seem to have been, at about that time, several exotic species at large in South Wales; another was *Eumolpus dillwynii* Steph., since shown to be conspecific with a widespread Oriental species (cf. Arrow and Champion, 1899).

(*Valgus hemipterus* L.—It is, perhaps, rather curious that Fowler (1890) makes no mention of either this or the last species. Stephens (1830: 232) has the following record of *V. hemipterus*:

> "This insect has recently been captured in the west of England; and two specimens in the late Mr. Francillon's cabinet are said to have been taken in a chalk pit in Kent. 'I have received this species from Bath alive, also from Devonshire'.—G. WAILES, Esq.".

It must not, however, be overlooked that in the appendix (p. 374) the author withdraws Wailes's record, pointing out that it was wrongly ascribed in the text to *Valgus* and in fact relates to *Cetonia aurata*. At first sight this correction still leaves intact the vague 'west of England' datum, or at least nothing is said to the contrary; but a perusal of the arrangement of similar entries under other species leads one to doubt whether that is so, and it thus seems likely that only the reputed Kent record remains. This notion is strengthened by the fact that in the Manual (1839: 170) Stephens treats the species within brackets, i.e. as doubtfully British, and gives only 'London district', with a query.

The above unsatisfactory reports of this very characteristic species receive, perhaps, some small measure of support from the existence, in the 'doubtful' drawer at the end of the Power collection, of an old specimen having the following note attached: 'Among a number of common British Coleoptera taken by Mr. Clifton, and pinned in same way. Chas. A. W[aterhouse]'. It is not very improbable that *Valgus hemipterus*, which is widespread in Europe and breeds in old stumps of fruit trees, etc., may long ago have been a native of southern England. As with *A. agricola*, however, the strong element of doubt—coupled with the total lack of any later and better-authenticated records—constitutes the best reason for continuing to exclude the species from our list.)

Oxythyrea funesta Poda (=*stictica L.*).—This small, speckled, very hairy chafer is included as British by Fowler (p. 58) but only doubtfully, and for many years now it has been omitted from our list. It is, however, very common on the Continent, and as far as Britain is concerned has sometimes been regarded as a casual introduction with plants, etc. This is certainly the case with specimens occasionally taken in London markets, florists' or fruiterers' premises, and the like, although such captures either are very rare or seldom find their way into the literature; in any case they seem to form a minority of the British records of the species. It is, perhaps, possible to explain the *whole* of the small number

of the latter as importations or, more often, their progeny; but only by unduly stretching the probabilities. At all events it is virtually certain that the insect must have bred in this country on several occasions, and it may do so again. Though doubtless there are puzzling features in the reported occurrences, the evidence suggests a very scarce native or established resident confined for many years to the Lancashire area; and in my view *O. funesta* is far better entitled to be considered British than are several other species usually so regarded.

The earliest record (Stephens, 1830: 233) is of three or four examples captured near Windsor (on apple blossom, according to Curtis) by T. R. Griesbach; while others occurred about the same time at Chichester. Subsequent records, however, are from quite another area. In June,[14] 1862, three specimens (including a pair *in cop.*) were taken by Sidebotham and Edleston from flowers of *Rosa spinosissima* at Grange on the Lancashire coast (Power, 1865: 236; Fowler, p. 58). Two years later, the beetle occurred in a garden at Whalley Range, S. W. Manchester; the following details are from a label on one of the specimens preserved in Manchester Museum (Johnson, 1962: 164-5):

> "O. sticta [*sic*], Whalley Range, brought alive to me by Thos. Gregory, Mr. J. Carver's gardener, off the flowers of rhododendron, June 1864 —five were taken in one day, none since. I offered the gardener 1s. each, but no more turned up . . . I expect they had come with the shrubs.—J. Ray Hardy. Mr A. Reston got two of this catch".

Reston appears to have published this record, but I have not come across his note. The next occurrence was also in a garden at the same place, but whether the same or a different one is not mentioned—in fact it is distinctly odd that Hardy (1867) makes no reference in this note to his previous experience:

> "Some specimens of *O. stictica* were found in a garden at Whalley Range . . . on the evening of Monday last [i.e. 1st or 2nd week of April, 1867], crawling upon soil which had been shaken from the roots of British Ferns collected last year. I can offer no theory to account for the circumstance of their occurrence; and can only say that they are in a perfectly fresh condition, and present every appearance of having only just completed their final change".

Neither Fowler nor Johnson give this record, which, from the fact that the collector and locality are the same, may have been confused by some with the preceding. Hardy most likely distributed his second batch of specimens; I possess a good one with the data 'Near Manchester, J.R.H.' (*ex* Janson) which may well be one of them.

There is then a gap of some ninety years—which is remarkable—before the species is again heard of in Britain (ignoring possible occasional and obvious importations, *vide supra*), so it is noteworthy that the two records of this century (very recent but neither, unfortunately, quite satisfactory) should both be for the same part of the country as the 1862-4-7 crop of records—though at more widely distant places. The first is of an example taken in a house at Congleton, Cheshire, by G. V. Baxter, 28.iii.1955 (Johnson, p. 165); perhaps imported, but in view of

[14]Fowler says 'July' but this does not agree with Power's statement

the Lancashire captures the question must remain open. The second (and more interesting) concerns two specimens apparently taken in the far more rural locality of Silverdale, Mid Lancs., by a collector from Bolton, some time in the late 'fifties—the record unpublished and unverified. I was personally informed of this by the late B. Cooke, who had learnt it from the late Dr. W. D. Hincks. Mr. Cooke also passed on the information to Mr. P. Skidmore, from whom Mr. Johnson had it (independently of myself) and can thus confirm my recollection of the matter. It was probably only Dr. Hincks's failing health at the time which prevented him pursuing the question; as it is, it must be hoped that the true facts will be elicited at some future date and the record (if genuine) placed on a firm basis. Unsatisfactory as it is, it can hardly be a sheer fiction, and is rendered both more plausible and more significant by the existence of the previous records from further south in Lancashire. Coleopterists visiting Silverdale between April and June should look out for the insect on flowers.

It will be noticed that the four or five captures of *Oxythyrea* in the wild, made since the two old Stephensian records, exhibit practically none of the 'scatter' expected from a series of chance introductions. No convincing reason could be offered for the restriction of such random importations to the Lancashire area—why, if they were merely fortuitous, should there not have been similar captures at large in other parts of Britain over the past 130 years or more? Further, there is the suggestive fact that all the catches (again leaving out of consideration any obvious introductions into markets, docks or the like, and apart from the ambiguous case of the Congleton example) were of more than one individual. Any one of the occurrences, no doubt, considered in isolation, could easily have been due to introduction; but taken together, they reinforce one another and add up to a different picture. Thus, though one might on the face of it agree with Hardy that his specimens from the rhododendrons had 'come with the shrubs', there was the finding of the three at Grange two years earlier (from the plant specified, it was doubtless on the sandhills), suggesting that the species was quite possibly already resident in the area. The occurrence, three years later, of several more which seem likely to have developed in soil around the roots of ferns expressly stated to be British, is also of much interest. One would like to know where the ferns had been gathered—in the same part of the country, I suspect. But enough should by now have been said to give some substance to the claim of *O. funesta* to British 'nationality'.

Trichius zonatus Germ. (=*abdominalis* Mén.).—Although very little is known of this species in Britain, it has evidently occurred a number of times, and it is doubtful whether all the specimens can be reckoned as introductions. There is, of course, the usual exasperating lack of precise information—or, too often, of any whatever—regarding all the early captures, besides which it must be borne in mind that the species so closely resembles the unquestionably native *T. fasciatus* L. that mistakes may sometimes have arisen. Old specimens are comparatively frequent in the larger collections, while records are not confined to the previous century and the most interesting is actually the most recent. Otherwise, it is true, those of this century (very sporadic) are mainly obvious importations, but the species may formerly have been a rare native also.

Fowler (pp. 61-2) includes the species as British but admits that the evidence is poor. It has been omitted from most of our subsequent literature, and notably from the 1945 Check List, but is included in the 1956 Handbook—though as 'doubtfully British'.

The original examples on which F. Smith introduced *T. zonatus* to our list in 1848 (*vide* Fowler, *l.c.*) were without history, as also were some which Fowler had from E. Brown's collection. Samuel Stevens believed that his exponents of the species were taken in Wales; but as *T. fasciatus* is now known to be rather widespread in the principality, it is difficult not to think that some confusion had arisen over the two species in this instance. Others again were in the collection of J. F. Stephens some time after 1839 (as shown by a MS note in my copy of the 'Manual', made in 1849 by a previous owner). Casual importation, therefore, seems little likely to have accounted for the whole of the considerable number of specimens in our collections by about the mid-century. In the Power collection there are seven, four of them labelled 'B.M. Coll.", and one of the latter with a second label 'Perthshire'; while of the remainder, two are from Tilbury Docks (obviously imported) and one from Swansea (Power) with 'E. Brown' beneath the card. It will be noted that Perthshire and Swansea are areas in which *T. fasciatus* has been recorded as taken freely, so that one naturally wonders whether some error of labelling could have occurred—the insects themselves are certainly *T. zonatus*. It hardly seems likely that the areas in question produced *both* species. The Swansea specimen is of interest as apparently supplying the missing locality for the E. Brown specimens whose source Fowler had failed to trace. It looks, therefore, as though—if the locality is correct—either a number of *zonatus* were imported *via* Swansea Docks, or, conceivably, the latter was in fact the native *Trichius* of the area after all. In that case, the species taken freely there by Dillwyn many years ago and recorded as *fasciatus* (cf. Fowler, *l.c.*) should really have been *zonatus*. This was the opinion of both Smith and Stevens, to which Fowler also inclined, and there may have been good grounds for their belief. It would, if true, furnish a source for the rather numerous early specimens—they would have been distributed by Dillwyn. I am not aware that Dillwyn's species was ever definitely confirmed as *fasciatus*; from the wide occurrence of that species in Wales, it has commonly been assumed. (Perhaps a present-day Swansea coleopterist could throw some light on the question.)

There is, Mr. Johnson informs me, a specimen of *T. zonatus* in the Blatch collection at Manchester, labelled 'Hants'.

Passing over undoubted introductions, the latest British capture merits special notice. This is of a single example taken from elder flowers in woodland west of Marlow, Bucks., on 19th June, 1959, and recorded as *T. fasciatus* but later corrected to *T. zonatus* after examination by Dr. E. B. Britton (Streeter, 1959: 177; 1960: 120). As the captor remarks, the locality and habitat suggest the possibility that the species may be breeding in the area, and it will be interesting to see whether the next decade yields evidence of this.

Whatever the exact status assigned to it, it will probably be granted that the species has occurred here sufficiently often to warrant its being given a permanent place on our list

Conclusion

The foregoing survey of the 'reputed British' Lamellicorns will have shown, at least, the practical impossibility of arriving at a firm decision as to their status in several cases. If, more often than not, I have given such cases the benefit of the doubt, it is not to imply that no doubt remains. Where the considerations are finely balanced it will not matter greatly which way the decision falls—but, clearly, it is desirable to keep the 'doubtful' category as small as possible. These remarks apply to some half-dozen species; for the rest, I think, a stronger case has been made out. It must not, of course, be assumed that for any given species the facts assembled are necessarily complete; other important (possibly even decisive) data may have been missed—or lurk, unpublished, in museums or private collections, etc. But it is hoped that, in spite of the problems remaining, the review may be found of some use by those interested in our coleopterous fauna.

Summary of Proposals

The following changes in the List (Kloet & Hincks, 1945) are recommended:

Platycerus caraboides L. and *Polyphylla fullo* L. to be added, but marked as extinct.

Trox hispidus Pont. to be deleted.

Saprosites mendax Blkbn. to be marked as an established introduction.

Aphodius varians Duft. and *A. sturmi* Harold to be added, but marked as requiring confirmation.

Oxythyrea funesta Poda and *Trichius zonatus* Germ. to be added.

Onthophagus similis Scriba (=*fracticornis* auct. Brit. *nec* Preyssler) will in any case require to be added.

(For classification and order of families, it is suggested that Britton (1956) be followed; users of this work however should beware of accepting as complete many of his distributional and habitat data.)

Acknowledgments

I am very grateful to Dr. E. B. Britton and the Rev. C. E. Tottenham for procuring for my inspection specimens of *Trox* from the Matthews and the Cambridge Museum collections respectively; to Mr. D. K. Kevan for communicating his discovery of the true *Onthophagus fracticornis* in the Royal Scottish Museum collection, and pointing out an excellent character for its recognition; to Dr. B.-O. Landin, of the Zoological Institute, Lund, for going to much trouble in attempting to recover the probable Irish captures of this species; and particularly to Mr. Colin Johnson for some very interesting and useful unpublished data from specimens in the Manchester Museum, for drawing my attention to the record of *Aphodius sturmi*, and for other information and much helpful discussion to which his special knowledge of the Scarabaeoids has given added value.

References

Anon., 1841. *Trans. ent. Soc. Lond.*, **3** (Journal): x; 1913, *Proc. ent. Soc. Lond.*, **1913**: v.

Arrow, G. J. 1899. *Anomala Donovani*, Marsham: synonymical note. *Entomologist's mon. Mag.*, **35**: 269.

Benesh, B., in Junk, W., 1960. *Coleopterorum Catalogus*, Suppl., ed. 2, pars **8** : 11. Berlin.
Blair, K. G., 1931. The beetles of the Scilly Islands. *Proc. zool. Soc. Lond.*, **1931** : 1211-58.
Bouskell. F., 1903. *Aphodius sturmi* Harold : a British insect. *Entomologist's Rec. J. Var.*, **15** : 92.
Britton, E. B., 1956. Coleoptera Scarabaeoidea (Lucanidae, Trogidae, Geotrupidae, Scarabaeidae). *Handbk. Ident. Br. Insects*, **5** (11).
Buck, F. D., 1958. The South London Entomological and Natural History Society : February 13th, 1958 [Report of meeting]. *Entomologist's mon. Mag.*, **94** : 96.
Champion, C. G., 1899. *Eumolpus dillwynii* Steph. : synonymical note. *Ibid.*, **35** : 269; and see Tottenham, C. E.
Curtis, J., 1839. *British Entomology*, **1** (pages unnumbered). London.
Dale, C. W., 1896. *Psammobius caesus* Panz. in the Scilly Isles. *Entomologist's mon. Mag.*, **32** : 41.
Fowler, W. W., 1890. *The Coleoptera of the British Isles*, **4**. London.
Hansen, V., 1958. *Danm. Fauna*, **64** (Suppl. xx). København.
Hardy, J. R., 1867. Occurrence of *Oxythyrea stictica* near Manchester. *Entomologist's mon. Mag.*, **3** : 280.
Horion, A., 1951. *Verzeichnis der Käfer Mitteleuropas*, **2** : 369-70. Stuttgart.
Johnson, C., 1962. The Scarabaeoid (Coleoptera) fauna of Lancashire and Cheshire and its apparent changes over the last 100 years. *Entomologist*, **95** : 153-65.
Kloet, S. G., & Hincks, W. D., 1945. *A check list of British Insects* : 198 : 200. Stockport.
Landin, B.-O., 1959. Notes on *Onthophagus fracticornis* (Preyssler) and *O. similis* (Scriba) (Col., Scarab.). *Opusc. ent.*, **24** : 214-24.
Morley, C., 1941. What is *Scarabaeus agricola* Don. (Col.)? *Entomologist's mon. Mag.*, **77** : 163.
Pearce, E. J., 1926. *A list of the Coleoptera of Dorset* : 103 (footnote). Dorchester.
Power, J. A. 1865. On some new and rare species of British Coleoptera. *Entomologist's mon. Mag.*, **1** : 235-6.
Sharp, D., 1909. *Aphodius niger* Panz. in England. *Ibid.*, **45** : 124-6.
Stephens, J. F., 1830. *Illustrations of British Entomology, Mandibulata*, **3**. London.
Stephens, J. F., 1839. *A manual of British beetles, or Coleoptera*. London.
Streeter, D. T., 1959. *Trichius fasciatus* (L.) (Col., Scarabaeidae) in Bucks. *Entomologist's mon. Mag.*, **95** : 177.
Streeter, D. T., 1960. A record of *Trichius zonatus* Germ. (Col., Scarabaeidae) in England. *Ibid.*, **96** : 120.
Tottenham, C. E., 1930. *Saprosites mendax* Blackb. in Sussex. *Ibid.*, **66** : 231.
Tottenham, C. E., & Champion, G. C., 1921. A *Saprosites* (?*parallelus* Harold) in Britain. *Ibid.*, **57** : 252-3.
Walker, J. J., 1932a. The Dale collection of British Coleoptera. *Ibid.*, **68** : 71-5.
Walker, J. J., 1932b. An annotated list of the Coleoptera of The Isle of Sheppey. *Trans. ent. Soc. S. Engl.*, **7** : 81-140.

63 Blackheath Park, London, S.E.3. 30th March 1965.

More Diptera in Morayshire

By L. Parmenter

The August visit to Lochindorb, included in Mr. R. M. Payne's recent account of some Scottish collecting, recalled a short visit my wife and I paid to this delightful loch on the sunny July 9, 1960. As we drove towards the loch along the narrow road the black-headed gulls welcomed us, gathering in advance at each parking or passing bay. They were duly fed as they must have been many times previously. A pair of mallard swam on the loch, and lapwings, golden plovers, meadow pipits

and wheatears were about its margins, with a short-eared owl hunting over the moorland. Our other visitors whilst by the loch were the Tabanids, *Haematopota pluvialis* L. and *Hybomitra montanus* Mg. and the Ceratopogonid *Culicoides heliophilus* Edw. that is unusual in biting freely in bright mid-day sunshine whereas most species of the genus prefer late afternoon or dull periods.

The nematocera of the loch margin—moorland with some woodland and scattered trees—included *Erioptera trivialis* Mg., *Gonomyia dentata* de Meij., *Limnophila* (*Phylidorea*) *fulvonervosa* Schum,. all common and widely distributed in Britain, and the typical moorland species *Ormosia pseudosimilis* Lund. and *Limnophila* (*Phylidorea*) *meigenii* Verr. with *Limnophila* (*Elaeophila*) *maculata* Mg. common about the margins of brooks. Others were *Simulium equina* L. and four *Chironomids* kindly identified by Mr. P. Roper—*Chironomus* (*Camptochironomus*) *tentans* F., *C.* (*Endochironomus*) *impar* Walk., *Hydrobaenus* (*Psectrocladius*) *obvius* Walk. and *Procladius choreus* Mg.

Three species of *Dolichopus* with black femora were caught on the marshy vegetation—*atratus* Mg., *atripes* Mg. and *vitripennis* Mg. and a fourth species was quite common—*simplex* Mg. The Empididae swept from low branches of the trees included the common, widely distributed *Hybos femoratus* Müll, *Tachydromia pallidiventris* Mg. and *Trichina clavipes* Mg. *Hilara intermedia* Fall. is known mostly from Scotland and *Tachydromia notata* Mg., generally from sandy areas. The few *Rhamphomyia stigmosa* Macq. were unexpected for this is regarded as a May and June species. The rarest taken were four males and a female of *Bicellaria subpilosa* Collin previously known from a few counties of the Scottish Highlands. Two male *Megaselia* (*Aphiochaeta*) *pumila* Mg. (det. C. N. Colyer) were taken and a few species of Syrphidae all of wide distribution—*Melanostoma mellinum* L., *Pipizella varipes* Mg., *Platycheirus clypeatus* Mg. and *Sphaerophoria menthastri* L.

The acalyptrate species present included dung and debris frequenters —*Themira lucida* Staeg. and *superba* Hal., *Sepsis cynipsea* L., *fulgens* Mg. and *violacea* Mg., *Borborus ater* Mg., *Chaetopedella scutellaris* Hal., *Scatophaga squalida* Mg. and about the loch margin *Pogonota hircus* Zett. Of species associated with grasses were *Chamaemyia juncorum* Fall., *Opomyza germinationis* L., *Chlorops* (*Cetema*) *elongata* Mg., *Chlorops hypostigma* Mg., *C. pumilionis* Bjerk., *Oscinella nitidissima* Mg., *O. posticata* and *Thaumatomyia notata* Mg. The Psilid, *Loxocera aristata* Panz. and *Herinia frondescentiae* L. also taken are of wide distribution in marshy areas and the leaf mining *Hydropota ranunculi* Hal. was also swept.

The northern Tachinid *Linnaemyia haemorhoidalis* Fall. was the only species noted of the family other than the common and widespread parasite of Tipulidae—*Siphona geniculata* Deg. The predatory *Coenosia tigrina* F. lurked at the side of tracks and others of the genus netted were *C. means* Mg., *C. pedella* Fall. (=*decipiens* Mg.) and *C. perpusilla* Mg. The remaining Muscidae found are of wide distribution—*Phaonia incana* Wied., *Limnophora* (*Pseudolimnophora*) *triangula* Fall. and the northern *Lasiops* (*Trichophthicus*) *nigritellus* Zett. and one common and widely distributed Anthomyid—*Botanophila discreta* Mg. (at one time regarded as a *Pegohylemyia*). All the species were taken in the Field Layer as regarded by Nature Conservancy, i.e., between 6 inches and 6 feet off the ground.

Geology as an Ecological factor in the Distribution of an insect
The Fly *Symphoromyia immaculata* F. (Dipt. Rhagionidae)

By Alan E. Stubbs

Geology is an easily ignored aspect of the distribution of an insect.

For appreciation of distribution reliance has been placed in the past on building up county lists which often become meaningless lists of records for each county. If localities are given these are often too vague. The neighbourhood of a town, or a single common, may include a wide range of habitats so that records may be meaningful only to those who know the area. However, one gathers the general pattern of distribution and one may speak of continental or northern distribution.

It is amazing how little information is recorded on the habitat of insect species, but usually this information is condensed to 'woodland' or 'grassland'. Occasionally these descriptive terms become a little more meaningful, such as 'heathland', suggesting a sandy soil, or 'chalk grassland', but this is usually the nearest one gets to geological consideration. Though many entomologists are chiefly interested in amassing a collection, it is surprising that more notice is not taken of ecology, since a knowledge of the ecological requirements of a species will streamline the search for it. Ecology tends to be regarded as 'the feel' of a locality and the experience of a lifetimes's collecting. Useful information on habitat is often omitted in print, so it becomes difficult to draw upon other's experience and to use fully their records. True a balance must be met with the time available for recording and one often is not aware of what one should have noted in the field until after the event. In looking for common denominators between localities, geology can be particularly useful, and generally need not be recorded in the field since maps are available for study. Entomologists generally lag in this field, whereas botanists for years have recognised the relationship between geology, soil and vegetation. The best use entomologists make of this situation is in the pursuit of phytophagous insects feeding on plants of local distribution. Any wider suggestion that geology and soil may be a valid consideration in distribution is usually frowned upon as unlikely. This attitude is often an excuse for not looking into the matter and because in chasing the prized insects it is easy to ignore the geology out of sight beneath one's feet.

This paper has its origin in the discovery of a small dark grey fly obtained by sweeping at three localities. Its behaviour and perky appearance at once suggested that it was a member of the family Rhagionidae and it was readily identified as *Symphoromyia immaculata* F. which Verrall in 1909 described as 'very little known as a British species' (*British Flies* vol. iv). A few further records were gathered from Verrall and the British Museum Collection and it was striking that these localities were in chalky districts as were my own. It seemed that this rare species may be localised by a preference for calcareous districts so records were gathered from as many sources as possible to see if this hypothesis was

tenable. The hypothesis, as a preference but not a restriction, is supported by the evidence which is set out below, and seems a good example on which to base discussion on geological aspects of distribution.

Geology is taken as the central theme of the many possible interdependant ecological factors affecting the distribution of an insect, since it should be regarded as the starting point in describing any habitat—the start of the sequence geology—soil—vegetation. The available recorded information is scanty and it may be argued that much has been read into a little evidence. On the other hand, dipterists cannot hope to have adequate records on a national scale for common, let alone rare species. In any case, observations of where a species lives should be used as a stepping stone to answering the more interesting and important questions of why and how. The suggestions made are only provisional but, as a discussion it may act as a background in future study of the species and may be found useful in stimulating an awareness of geology as a valid consideration in the distribution of an insect.

(*to be continued*)

Current Literature

The Larvae and Pupae of the British Cylindrotominae and Limoniinae (Diptera, Tipulidae). **By A. Brindle.**
1967. *Trans. Soc. Brit. Ent.*, **17**: 151-216.

At least since 1955 the author has been searching for diptera larvae and pupae especially of the Tipulidae. The present paper is partly the result of his studies in the field and laboratory and partly on his search through relevant literature. The 173 figures are so useful when descriptions have to be abbreviated in these days of high printing costs. In his introduction he states his aim to provide a practical key for the non-specialist, choosing external characters adequate to separate genera and often species. His nomenclature follows Coe in the Royal Ent. Soc. Handbook series but with *Trichyphona* raised to generic rank and two species *claripennis* Verrall and *lucidipennis* Edwards transferred to *Dicranota* in accordance with the author's earlier paper in *Ent. mon. Mag.*, **98**: for 1962, but actually published in 1963. Under Methods, he describes his collecting, preservation and examination techniques. A general brief account of the characters of the tribes of the two sub-families under consideration follows. Then under Ecology he describes and discusses habitats (with a table of those used by each genus), mode of life and adaptations. The larval and pupal characters are described and then the major part of the work, the keys to the larvae and pupae of the subfamilies and 28 genera and where possible to known species, with illustrations and often an historical account of prior studies. Finally a check list of the genera, functioning also as an index to the figures and ending with a carefully selected list of 37 references. Actually one would be wise to consult his earlier papers for they include figures complementary to those in this latest paper.

This is a fine attempt to record the author's discoveries which must have been made after much hard work searching for these grubs that mostly inhabit wet conditions. By combining this original work with the published studies of others, an account is given of our present knowledge of the early stages of the Tipulidae. Much remains to be done as the author indicates but a fine start is given to those who decide to study this family of flies of such interesting adaptations. The author obviously has condensed his knowledge but it is to be hoped that in due time it will be possible to see a more complete and full life history and ecological account published dealing with these flies from egg to adult stages.

L.P.

Notes and Observations

KILLING AGENTS—I gave up the use of cyanide fifteen years ago in favour of Ethyl Acetate ($CH_3COO\ C_2H_5$) and have found it extremely satisfactory. I have a plain bottle with about one inch of plaster of paris in the bottom. When I want to use it, I put in about 2 c.c. of ethyl acetate with a fountain pen filler. It is clean, non-poisonous, acts quickly, does not affect colours, and keeps the insects relaxed. I can confidently recommend it.—AIR MARSHAL SIR ROBERT SAUNDBY, K.C.B., Oxleas, Burghclere, Nr. Newbury, Berks. 1.x.1967.

I have used this killing agent for micros for many years, and have found it far more satisfactory than 880 ammonia which does affect some colours.—ED.

URESPHITA (MECYNA) GILVATA FAB. (POLYGONALIS HÜBN.) IN HAMPSHIRE.—On 30th September my moth trap contained a single example of this handsome pyrale, stated by Beirne to have been recorded only about six times during the 19th century. Mr. C. W. Mackworth-Praed, who kindly identified the moth for me, showed me a specimen which he had taken in his own trap, a few miles away, last year.—REAR ADMIRAL A. D. TORLESSE, 1 Sway Lodge, Sway, nr. Lymington, Hants. 15.x.1967.

LIBYTHEA CELTIS FUESSEL. ATTRACTED TO DRY MUD.—Mr. Bretherton's record of the attraction of dry mud (1967, *Entomologist's Record*, **79**: 194) is most interesting, as, although there are innumerable references to the attraction of wet mud, I cannot recall a single reference to the attraction of dry. Of course 'wet' and 'dry' are relative terms and it is quite possible that the dry mud was still moist enough to allow the absorption of the mineral salts that the late C. L. Collenette considered the real attraction. It is also possible that the butterflies provided their own moisture by exuding droplets from the anus and then sucking it up, together with the dissolved salts, through the proboscis. This behaviour has been recorded on more than one occasion when butterflies have settled on human skin coated with dried sweat.—D. G. SEVASTOPULO, F.R.E.S., Mombasa, 15.x.1967.

M. miniata Forst.

p. 82—

Farningham Wood (div. 1), many, very fresh, July 27, 1962 (R. G. Chatelain). Meopham (div. 6), 1959; Fairseat, 1960 (J. Ellerton).

Line 8 from bottom—for "Reiden" read: Reinden.

S. irrorella L.

p. 83—

Dungeness (div. 15), July 24, 1962 (1), July 26, 1963 (1) (R. E. Scott); July 18, 1963 (1) (C.-H.).

C. mesomella L.

p. 84—

Chatham district (div. 6a)* (Crozier, *Nat. Hist. Rev.*, **5**: 128). Willesborough (div. 12), 1957 (1) (W. L. Rudland). Goudhurst (div. 13), 1956 (2) (W. V. D. Bolt). Tenterden (div. 14), 1960 (C. G. Orpin).

L. quadra L.

pp. 85-86—

N.d.: Ramsgate, one, in Hope Dept., Oxford (R. F. Bretherton). 1958: Goudhurst (div. 13), ♀, at light, July, laid ova which were sterile (W. V. D. Bolt). 1962: Otford (div. 6), one (W. B. L. Manley). 1963: Willesborough (div. 12), one, July 15 (W. L. Rudland); Ham Street, one, July, taken by B. F. Skinner and C. G. Bruce (R. G. Chatelain). 1964: Bromley (div. 1), one, July 16 (D. R. M. Long); Ickham (div. 4), July 17 (♂), 27 (♂) (D. G. Marsh); Dover (div. 8), July (4 ♂♂) (G. H. Youden). 1965: St. Mary Cray (div. 1), ♀, in m.v. trap, August 13 (R. G. Chatelain).

E. deplana Esp.

p. 86—

High Elms, Farnborough (div. 5), two at m.v.l., August 2, 1962 (B. F. Skinner). Westwell (div. 7), ♀, August 5, 1952, taken by E. Scott (C.-H. coll.); Kings Wood, Challock, fullgrown larva which I beat from yew, June 9, produced an imago, July 2, 1963 (C.-H.).

Line 20 down—for "months" read: moths.

E. griseola Hübn.

p. 86:

lines 6-7 up—delete "Westwell, one, August 5, 1952 (E. Scott)". This refers to *E. deplana* (*q.v.*).

p. 87—

Chatham district (div. 6a)*, one (Crozier, *Nat. Hist. Review*, **5**: 128). Goudhurst (div. 13), one at light, 1958 (W. V. D. Bolt). Tenterden (div. 14), 1960 (C. G. Orpin).

First Record, 1829: *Lithosia flava*, "taken near Birch-wood and at Darenth" (Stephens, *Haust.*, **2**: 95), replaces that given.

E. lurideola Zinck.

p. 87—

Dungeness (div. 15), 1963 (30) (R. E. Scott).

E. complana L.

p. 88—

St. Mary Cray (div. 1), one, July 27, 1964 (R. G. Chatelain); Bromley, 1963 (3), 1964, (2), 1965 (3), 1966 (none) (D. R. M. Long). Seal Chart (div. 10), eight at dusk, July 31, 1938 (W. E. Busbridge, *Diary*). Sevenoaks Weald (div. 11), one, July 23, 1960 (E. A. Sadler). Goudhurst (div. 13), not uncommon (W. V. D. Bolt, *pers. comm.*, 1961). Woodchurch (div. 14), one, August 5, 1899 (Stockwell, *Diary*).

E. pygmaeola Doubl. ssp. *pallifrons* Zell.

p. 90—

Dungeness (div. 15).—1963: July 22-August 9 (31) with max. (10) on July 24; 1964: July 7-August 3 (84) with max. (30) on July 15; Boulderwell, July 16 (2), 17 (1), 1966 (R. E. Scott); S. Wakely and I saw it swarming about 1 a.m. on July 23, 1963, at C. G. Bruce's m.v. light near the level crossing, estimating the numbers at from some 200-300 and as quite exceptional (C.-H.).

Line 15 up—for "*otites*" read: *nutans*.

E. caniola Hübn.

p. 91:

line 18 down—for "Meldolla" read: Meldola.

E. sororcula Hufn.

p. 91—

Chatham district (div. 6a) (Crozier, *Nat. Hist. Review*, **5**: 128).

p. 92—

Woolwich Wood (div. 8), one, June 9, 1901 (Stockwell, *Diary*). Goudhurst (div. 13), one at light, 1959 (W. V. D. Bolt).

Line 11 down—after "larvae" insert: beaten off oak branches.

P. muscerda Hufn.

pp. 92-93—

Fordwich (div. 4), specimen in Hope Dept., Oxford, labelled "Fordwich" (R. F. Bretherton); probably a very old example but nonetheless interesting as showing a probable extension of range up the Stour valley (C.-H.). Lydd Town (div. 15), one at light, August 14, 1965 (D. W. H. ffennell).

A. rubricollis L.

p. 93—

Ham Street (div. 12), June 14 (1), 19 (1), 1952 (G. H. Youden); 1962 (de Worms, *Entomologist*, **96**: 55). Goudhurst (div. 13), ♂ at light, 1957 (W. V. D. Bolt).

Line 16 up—after "(1908);" insert: Woolwich Wood, one, June 15, 1924.

C. trituberculana Bosc

p. 94—

Dungeness (div. 15), one, July 17, 1964 (R. G. Chatelain).

U. pulchella L.

p. 97—

Some remarkable aberrations were reared from the Westerham *pulchella* taken by R. C. Edwards on October 1, 1961, also much information obtained on the life history, etc. (cf. Kettlewell, *Entomologist*, **96**: 102-107; idem, *Entomologist*, **97**: 169-172, plt. 7, 7a, 7b; Kettlewell and Cadbury, *Proc. S. Lond. ent. nat. Hist. Soc.*, **1962**: 37; Edwards, *Proc. S. Lond. ent. nat. Hist. Soc.*, **1962**: 29). 1962: East Malling (div. 11), August 7, 2 ♀♀, 1 ♂, taken in m.v. trap by G. A. N. Davis (C.-H. coll.).

Line 10 from top—for "E.R." read: J.

C. jacobaeae L.

p. 97—

Dungeness (div. 15), May 27-August 1, 1963 (270), in m.v. trap, with maximum (60) on June 11 (R. E. Scott). In 1902, the larvae "literally swarmed from one end of the Folkestone Warren to the

other. During August hundreds might be gathered in a morning from the two species of ragwort growing there, and at the end of September the bare and leafless stems which everywhere met the eye, attracted the attention of even casual passers-by" (Webb, *Trans. E. Kent. nat. Hist. Soc.*, **1902**: 39). Dartford (div. 1), several larvae feeding on *Senecio elegans* in garden, 1962 (B. K. West); Blackheath, two moths, August 2, 1963, a late date (Allen, *Ent. Rec.*, **76**: 116).

S. lubricipeda L.

p. 98—

Sevenoaks Weald (div. 11), ova found on *Persicaria* (E. A. Sadler).

S urticae Esp.

p. 99—

Crayford (div. 2), one on post, June 12, 1961 (B. K. West). Willesborough (div. 12), two, 1964 (W. L. Rudland). Tenterden (div. 14), 1960 (C. G. Orpin). Dungeness (div. 15), June 14-July 30, 1962 (9), July 2-9, 1963 (2), June 11-29, 1964 (6); Boulderwell, June 6-July 7, 1966 (27), with max. (5) June 12 (R. E. Scott).

S. lutea Hufn.

p. 100—

D. R. M. Long counted 104 in his trap at Bromley (div. 1) in 1962, as against 60 in 1961 and 48 in 1963. On the other hand, it appears to have been curiously scarce at Dungeness in 1962, only one appearing at R. E. Scott's trap—on July 8.

C. mendica Clerck

p. 102—

Lee (div. 1), common at light, 1952-62 (C. G. Bruce); Orpington, common in m.v. trap, 1963 (R. G. Chatelain). Maidstone district (div. 11), 1952, larvae on apple and plum in orchards (Massee, *Rpt. E. Malling Res. Stn.*, **1952**: 147); Loose, ♂, at light, May 5, 1956 (E. Philp). Cranbrook (div. 14), 1961 (C. G. Orpin). Dungeness (div. 15), June 4, 1963 (1), May 17-26, 1964 (3) (R. E. Scott).

D. sannio L.

p. 103—

Blackheath (div. 1), ♂♂ "used to be very abundant on Blackheath, among the furze and fern, twenty years ago, but we have not seen it there since . . . " (Newman, *Br. Moths* (1869), 32). Ashford (div. 12), June 7, 1951 (C. G. Bruce). Dungeness (div. 15), one in m.v. trap, June 28, 1963 (R. E. Scott).

P. fuliginosa L.

p. 105—

Sidcup (div. 1), larvae on broom and *Senecio*, September 28-October 26, 1924 (Kidner, *Diary*). Deal (div. 8)* (Morris, *Proc. S. Lond. ent. nat. Hist. Soc.*, **1961**: 75). Sevenoaks Weald (div. 11), three, July 29-August 8, 1960 (E. A. Sadler). Chilmington (div. 12), about 50 larvae on a rubbish dump, many on *Ballota nigra*, October 12, 1963 (S. Wakely); Ashford, June 7, 1951 (C. G. Bruce): Willesborough, July 9-August 6, 1957 (13), August 7-29, 1958 (5), August 3-12, 1963 (3♂♂, 1♀), July 27-August 16, 1964 (4) (W. L. Rudland). Dungeness (div. 15), August 18, 1962 (1), June 28, 1963 (1) (R. E. Scott).

P. plantaginis L.

p. 107—

Poulton (div. 8), one, June 18, 1899 (Stockwell, *Diary*). It is now 20 years since this species was last seen in Kent (C.-H.).

A. caja L.

p. 108—

Blackheath (div. 1), larvae on Zonal Pelargoniums (Theobald, *J.S.-E. Agric. Coll.* (Wye), **1907** (16) 155). Folkestone (div. 16), two young larvae on *Plantago coronopus*, April 2, 1966 (C.-H.).

line 6 down—for "Bxley" read: Bexley.

P. dominula L.

p. 113—

First Record, 1748: "The Catterpillars (*sic*) . . . were found on the Hound's Tongue (b), the twentieth of April at Charlton in Kent" (Dutfield, *Natural History of British Moths and Butterflies*, facing plt. 6). This replaces the first record given.

A. polyodon Clerck

p. 114—

line 15 down—for **"Actinotis"** read **Actinotia.**

E. nigricans L.

p. 116—

Greatstone (div. 15), larvae excavated from sandhills, May 25, imago reared July 26, 1962 (R. F. Birchenough). Ab. *marshallana* Westw., was described from a Charing specimen (cf. Humphreys and Westwood, *Br. Moths*, **1**: 123).

E. obelisca Schiff.

p. 118—

The footnote on this page refers to this species and not to *A. segetum.*

A. segetum Schiff.

p. 119—

Kent [Wye district], larvae on potatoes "have burrowed into the tubers to a disastrous extent" (Theobald, *J.S.-E. Agr. Coll.* (Wye), **1902** (11) 52).

A. vestigialis Hufn.

p. 120—

Worth (div. 4), August 29, 1964 (T. W. Harman). Dungeness (div. 15), July 1 (1), 16 (1) 1964 (R. E. Scott).

A. clavis Hufn.

p. 121—

Tenterden (div. 14), 1960 (C. G. Orpin). Dungeness (div. 15), July 4-16, 1963 (11) (R. E. Scott).

A. denticulatus Haw.

p. 123—

Dungeness (div. 15), May 20-June 29, 1963 (1200), with maximum (275) on June 4; May 13-June 24, 1964 (1992), with maximum (207) on May 30 (R. E. Scott).

A. exclamationis L.

p. 124—

Kent [Wye district], larvae burrowed into potato tubers (Theobald, *J.S.-E. Agric. Coll.* (Wye), **1902** (11) 52).

CHANGE OF ADDRESS

Rev. GUY A. FORD, now of The Rookery Farmhouse, Norton, Bury St Edmunds, Suffolk.

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THE ENTOMOLOGIST'S RECORD
AND JOURNAL OF VARIATION
(Founded by J. W. TUTT on 15th April 1890)

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Some Causes of the Decline in the Numbers of Lepidoptera

By H. Symes

These notes were inspired by the Editor's appeal in the October 'Record' (**79**: 266) and consist of a list, based on the writer's personal observation, of causes that have led to the reduction, or even extinction, of the butterfly population in certain specified areas, and the species principally affected. I have included the names of a few local moths and of one dragonfly. Other entomologists no doubt will have lists of their own. I have arranged mine in alphabetical order, so as to avoid indulging personal prejudices by placing causes in any order that might imply precedence in the rogues' gallery.

1. (a) Afforestation, which generally means felling of hardwoods or ploughing up heathlands and replanting with conifers.
   (b) Examples of localities:—The New Forest, Hell Coppice, Ham Street, some Dorset woodlands and heaths, e.g., near Wareham.
   (c) Species affected:—*Argynnis paphia* L., *Limenitis camilla* L. (N.F.), *Apatura iris* L., *Strymon pruni* L., *Dicycla oo* L., *Catocala prommisa* Schiff. (H.C.).
2. (a) Building development.
   (b) Outskirts and environs of Bournemouth, mainly heathland.
   (c) *Coscinia cribraria* L.
3. (a) Climatic conditions:—Between 1959 and 1967 we had seven poor summers in succession. The cumulative effect of these must have been considerable. During this period, there was one winter of exceptional severity (1962-3). Such a winter is generally considered to be favourable to lepidoptera, partly because they suffer less than their predators. Moreover, a hard winter is often followed by a fine summer, as was the case in 1929 and 1947, both good years for lepidoptera. but this did not happen in 1963.
4. (a) Draining of marshland.
   (b) West Parley (Dorset).
   (c) *Oxygastra curtisii* (Neuroptera).
5. (a) Heavy grazing.
   (b) Hod Hill, Winspit.
   (c) Lycaenidae, *Euphydryas aurinia* Rott., *Hesperia comma* L., *Parasemia plantaginis* L., *Procris geryon* Hübn.
6. (a) Insecticides.
   (b) I have no particular localities in mind.
   (c) A year ago thousands of honey bees were killed in Dorset, and it is most unlikely that lepidoptera would have escaped from the widespread spraying.
7. (a) Mechanical shaving of grass verges and banks along country roads.
   (b) Almost anywhere in E. Dorset and W. Hants.
   (c) *Euchloe* (*Anthocharis*) *cardamines* L., Satyridae, Vanessidae, *Lycaena phlaeas* L., *Cucullia lychnitis* Ramb.
8. (a) Motor cars.
   (b) Everywhere. They carry thousands of family parties complete with dogs to localities previously unfrequented. To quote from a

recent newsletter of the Dorset Naturalists' Trust: "It is so easy to keep a bird off its nest a little too long, tread on a rare plant, or even sit down on a most important caterpillar without in the least realising what one is doing". It is also easy to start a fire.

(c) No species is exempt from this danger. At Badbury Rings the most affected are *Argynnis aglaia* L. and *Hesperia comma* L.

9. (a) Myxamatosis. This disastrous epidemic has upset the balance of nature; lepidoptera and entomologists have suffered from its consequences as well as foxes and buzzards. Rabbits used to control the growth of coarse grasses and other rank vegetation, including seedling bushes, especially hawthorn, and prevent the smothering of less vigorous growths such as the Leguminosae which are the food plants of *Leptidea sinapis* L. and most of the Lycaenidae.

(b) Hod Hill, Ridge Copse (near Fareham).

(c) Hod, see 5 (c): Ridge, *Nola albula* Schiff., *Acosmetia caliginosa* Hübn.

10. (a) Ploughing up of grassland.

(b) Winspit (Purbeck), Homerton, Camp Hill and Coombe Bissett (near Salisbury).

(c) Lycaenidae.

I have not mentioned the part played by birds. Prof. Willmer considers them the main culprits. He points out that the number of birds of prey has been greatly reduced, directly by shooting, and indirectly by insecticides, and that as a result the number of small birds, especially starlings, has increased. Unfortunately it is only too true that birds of prey, especially sparrow hawks, have become very scarce, and starlings excessively abundant. The only other birds that seem to me to have become more plentiful during my lifetime are jackdaws and magpies. Both these birds are determined egg-stealers, and I have heard from reliable sources that jackdaws played a big part in exterminating the chough in Cornwall and very nearly doing so to the Kite in Central Wales. By robbing the nests of smaller birds they would have tended to benefit the butterfly population, even if starlings, a pantophagous crowd, are harmful to it. Have the small birds that are almost entirely insectivorous really increased in number? Swallows have certainly decreased, and our resident species, especially the wren, the Dartford warbler, and the song thrush, were badly hit by the exceptionally severe winter of 1962-3. I believe that the number of small insectivorous birds has not increased, but that their feeding grounds have been restricted and this has led to more intensive hunting by the birds and less chance of survival by the insects.

A 1958 Survey of the Butterflies of Blackmoor Copse Nature Reserve

By I. R. P. Heslop, M.A.

I. INTRODUCTORY NOTE

In 1958 I wrote for the Society for the Promotion of Nature Reserves a Survey of the butterflies of Blackmoor Copse which has not previously been published with the exception of the notes on one species, and which

with the same exception I am reproducing hereunder exactly as originally written. The material therefore will now not only be accessible for reference, but will furnish a standard for subsequent comparisons. The exception alluded to is the Purple Emperor, all the material in connection wherewith (far exceeding that of all the other species together) was in fact published in substance in 1964 as portions of my joint monograph of the species, *Notes and Views of the Purple Emperor* (Southern Publishing Co., Brighton): though without any mention of Blackmoor Copse by name.

Blackmoor Copse, Wiltshire, previously and for many years privately fostered by myself, became on my recommendation and after prolonged negotiation the freehold property of the Society and a formal Reserve on 14th December 1956 with myself as Secretary of the Local Committee and acting Chairman. Reports by myself were published in the Society's Annual Report up to the time when, on changing my place of employment, I regretfully relinquished the positions of Secretary and Warden in 1961.

It will be observed hereunder that it was found possible to include 50 species of butterfly as occurring in Blackmoor Copse between 1940 (approximately) and 1958 (inclusive). This total appears to be surpassed during the present century only by the neighbouring Whiteparish Common (the integrity of which I successfully defended in court in 1959), Monkswood in Huntingdonshire, Great Breach Wood in Somerset (now much altered in character), and one of the grounds in the weald of West Sussex.

I am grateful to the Society for permission to publish this material here.

"Belfield", Burnham-on-Sea, Somerset.
18th July 1967.

II. THE 1958 NOTES ON THE SPECIES

Pieris brassicae Linn. (Large Garden White). Common everywhere, sometimes running to a very large size.

Pieris rapae Linn. (Small Garden White). Common.

Pieris napi Linn. (Green-veined White). Common.

Pontia daplidice Linn. (Bath White). Occurred here in 1945.

Euchloe cardamines Linn. (Orange-tip White). Common.

Leptidea sinapis Linn. (Wood White). At one time the Wood White had several stations in the South Wiltshire woods including Bentley Wood (not necessarily Blackmoor) and Whiteparish. It became extinct in all these grounds at about the same time that it disappeared from the New Forest (i.e., about 1900), except in Whiteparish where it lingered into the 'twenties.

In 1945 my wife and I saw two specimens in Whiteparish, catching (and releasing) one of these for assurance of identification. In 1956 one of my children took a specimen in the same wood.

In 1957, Mr. R. E. Haskell, Mr. J. M. Harris and myself each made separate and independent observations of the Wood White in Blackmoor (a single specimen in each case).

I regret that, despite the hopes entertained in the past, there was no observation of this species in the Reserve or its vicinity in 1958. It must be remembered, however, that the continuous unfavourable weather both curtailed flight time and hampered observation, in all species.

The Wood White's principal foodplant, the Tuberous Pea (*Lathyrus*

montanus) is scarce in the area (in fact I am not sure that I have seen this plant actually in Blackmoor), but the species feeds also on Tufted Vetch (*Viccia cracca*), which exists in quantity in the Reserve and its vicinity, and probably on other woodland vetches as well. It certainly feeds also on Bird's-foot Trefoil (*Lotus corniculatus*): so that, if it has (as I suspect) succeeded in establishing a station from which it can reach these two woods, this may be a downland one—as is quite normal for this butterfly in Devon and Cornwall.

It is to be noted that the western race (for which Wiltshire is the most eastern terrain) of the Wood White is noticeably distinct in appearance and season from the south-eastern race (e.g., as occurring in Surrey). There must be ecological differences as well, but as regards Wiltshire we have scanty data.

In woodland localities both in Sussex and Somerset the species appears to prefer tangled and overgrown rides or sometimes even tunnel-like cavities under the canopy. Conveivably, therfore, the over-growing of the rides in Blackmor may have favoured this species (if not here of downland origin); though this possibility must not interfere with the necessity of having the rides open and clean in the interests of the Purple Emperor.

Colias hyale Linn. (Pale Clouded-yellow). The occurrence of this migratory species so far west is periodic only. It has not been observed in the environs of Blackmoor since 1945 when it was numerous in the meadows on the fringe of the wood. I took one on Pepper Box Hill in 1955.

Colias croceus Fourc. (Common Clouded-yellow). Occurs in the area, in greatly varying numbers, in one year out of three on the average. In 1947 it was the commonest butterfly in the wood, occurring even in the deepest recesses and continuing into December. The winter of 1947-48 was a nominal one only and was succeeded by an early and maintained spring; with the result that a small stock of the species was enabled to overwinter in the chrysalis stage—an almost unprecedented event in England for this migratory species—and the butterfly was again on the wing in the spring of 1948 in this area.

Gonepteryx rhamni Linn. (Brimstone). Common. This year, and as has been noticed previously in the area, fresh specimens were out in early July *before* the hibernated examples had quite ceased to fly.

Argynnis paphia Linn. (Silver-washed Fritillary). Common. This year was the first in which I did not observe the beautiful black variety (*valesina*, the Dark Lady) in Blackmoor.

Argynnis cydippe Linn. (High Brown Fritillary). This has increased in numbers since the thinning of Blackmoor in 1948, and is now very common in the Reserve. It is the earliest of the large Fritillaries to come on the wing, normally on 24th June. This year the first specimen was seen on 7th July, and not another for several days afterwards. It is to be noted that the insect flies most commonly in the marsh area of the wood, greatly favouring the Marsh Thistle.

Argynnis aglaia Linn. (Dark Green Fritillary). At one time common in the wood. Since 1945 it has become progressively scarcer, but it still exists.

Argynnis euphrosyne Linn. (Large Pearl-bordered Fritillary). Common.

Argynnis selene Schiff. (Small Pearl-bordered Fritillary). Common.

Euphydryas aurinia Rott. (Marsh Fritillary). While the species occurred at several points in the Bentley Woods system (including Blackmoor) in the 'twenties; more intensive draining followed by several years of drought caused its total disappearance in the 'thirties. It reappeared in another part of Bentley Woods apparently about ten or twelve years ago. It has started to come back to Blackmoor since the drainage started to deteriorate during the last few years. Two or three specimens have now been seen in each of four years consecutively: 1955, 1956, 1957, and now 1958.

This year was so retarded that it was all the more pleasure to welcome the species when it made its first appearance in Blackmoor on 16th June. Observations in the Reserve extended into the first days of July—by far the latest date anywhere of which I have record. This year also it was observed that the Marsh Valerian had established itself in the marshy area of the Reserve. This is a very valuable subsidiary foodplant for this species.

Consequent upon the damper conditions there has been a huge revival of the principal foodplant, Devil's-bit Scabious (*Scabiosa succisa*) in Blackmoor. This plant here may be of a marshland strain, and is certainly much more luxuriant than the form growing on open downlands.

Drainage must be tackled in a large part of Blackmoor for the sake of the Purple Emperor butterfly. But I am most strongly of the opinion that, for the sake of the Marsh Fritillary (and other species), a certain area of Blackmoor—which I am prepared to indicate precisely—must be left completely undrained.

The ecological requirements of the Marsh Fritillary are very difficult to analyse. There is also a definite tendency for colonies to migrate: some are actually peripatetic, apparently quite independently of any considerations of suitability of site. No species is so subject to making local forms, and in some cases this may be the result of difference of habit. There are great fluctuations in the numbers of even comparatively fixed colonies: but there appears to be no doubt that there is a tendency for the species to become both scarcer and more localised in the United Kingdom than formerly.

The late Mr. S. G. Castle-Russell carried out field experiments, on a large and prolonged scale, with the object of working out the requirements of this puzzling species. His results were inconclusive.

The March Fritillary is by no means confined to marshy ground. Some colonies inhabit high downland. Both in Wilts. and in Somerset there are woodland colonies. Mr. Castle-Russell was convinced that the essential feature was a sharp slope, if only a low one, to give the larva (which is very active) refuge from accumulations of surface water.

Polygonia c-album Linn. (Comma). This species is numerous in the Reserve every year. Here its foodplant appears to be nettle, and there is nothing abnormal in the race. In contrast, at Whiteparish, only four miles away, the species took for some years to feeding on Sallow: thereby producing a particularly large and handsome form which, however, appears now to have died out. The species is endemic here; that is, its occurrence is not dependent on the expansion of territory that has occurred in the last 35 years. Incidentally, the note of the occurrence of

this species here in the early 'twenties, at page 141 of "The Entomologist" for June, 1930, is my first published one—though not by its name—in relation to Blackmoor.

Aglais urticae Linn. (SMALL TORTOISESHELL). Common. It is a token of the extreme nature of the weather that, for the first time in my experience, this year specimens of the *first* brood showed a tendency to seek quarters for hibernation.

Nymphalis polychloros Linn. (LARGE TORTOISESHELL). There is considerable evidence that since this, our rarest resident British species, abandoned its principal colony in Suffolk, it has been trying to establish a new colony in the area within a radius of 15 miles from the edges of Southampton Water. The sparse Sussex colony is stable. The separate Somerset and Dorset colonisations appear to have failed.

It has appeared in or near Blackmoor in each year from 1954 inclusive: usually only one specimen has been seen in a year, but last year, 1957, one was seen in Blackmoor in the spring and another in July. This year, on 6th August, I saw one in Mr. Haskell's garden. In 1956 several specimens were seen in the vicinity of Pepperbox Hill and Whiteparish; and one at Coombe Bissett.

The foodplants, apparently equally favoured, are Salix (Sallows and Willows) and Ulmus (Elm). But there appears to me to be some indication that the species cannot maintain itself permanently in a locality where *both* genera of trees do not exist in reasonable numbers. I would therefore advocate the planting of some elms on the fringes of the Reserve.

Nymphalis antiopa Linn. (CAMBERWELL BEAUTY). Observations, by members of a shooting party of General Fanshawe's, of a certain butterfly in the Reserve in early October 1957, can relate only to this species.

Nymphalis io Linn. (PEACOCK). Common.

Vanessa cardui Linn. (PAINTED LADY). Occurs here in most years, and is common here when it is common elsewhere.

Vanessa atalanta Linn. (RED ADMIRAL). Usually common.

Limenitis camilla Linn. (WHITE ADMIRAL). Common. This is another species of which, by tradition in the New Forest, the first appearance on the wing is usually associated with Midsummer Day (24th June). And as in the other case, that of the High Brown Fritillary, this species also was first seen in Blackmoor this year on 7th July.

Hampshire, Sussex and South Wilts. have always constituted the hard core of this species's distribution; and it seems likely that in our woods the species will not be affected by the recession that appears to have set in during the last few years from the extreme limits of expansion (e.g., Devon, South Wales, Salop, Nottingham) that were reached about 1945.

There is a distinct tendency for the species to "throw black" both in Blackmoor and in Whiteparish.

When we coppice portions of Blackmoor in rotation we must be careful to disturb the honeysuckle as little as possible.

Apatura iris Linn. (PURPLE EMPEROR). [See Introductory Note.]

Melanargia galathea Linn. (MARBLED WHITE). Common, even in the depths of the woodland.

Pararge aegeria Linn. (SPECKLED WOOD). Common.

Pararge megera Linn. (WALL BROWN). Consistently present, but sparse.

Eumenis semele Linn. (GRAYLING). A nice woodland form used to occur in both Whiteparish and Blackmoor, but has not been observed in the Reserve since 1945. I am informed that the species still occurs in

Alderbury Woods; but there it may be of a form proper to the heath which was once prevalent there and of which vestiges still remain.

Maniola jurtina Linn. (Meadow Brown). Abundant.

Maniola tithonus Linn. (Gatekeeper). Common.

Aphantopus hyperanthus Linn. (Common Ringlet). Common.

Coenonympha pamphilus Linn. (Small Heath). Occurs sparsely in one or two locations in the Reserve.

Hamearis lucina Linn. (Duke of Burgundy). At one time occurred freely in the south-eastern portion of Blackmoor as an overflow from its principal breeding ground which was where the forestry quarters now stand. Now its occurrence is confined to single specimens, which still however occur each year. The species is still well distributed in Bentley Woods proper.

Thecla betulae Linn. (Brown Hairstreak). (See below.) Has not been observed recently; but is always difficult of observation, and probably still occurs.

Thecla quercus Linn. (Purple Hairstreak). Very common. Here it has an exceptionally long flight season, sometimes extending to two months. A few females were caught in 1958, outside the Reserve, for experimental breeding.

[*Strymonidia pruni* Linn. (Black Hairstreak). I am quite convinced that this scarce and very local butterfly has a station fairly close to this wood system. It is necessary for us, therefore, at least not to interfere with conditions which are suitable to its existence or natural colonisation. These are at the moment apparently entirely favourable in a large part of the Reserve.

The nearest *known* substantial colony of this species is near Oxford. But it has during the present century been reported from Newbury, west Surrey, and Southampton. Finally, a specimen was taken a few years ago in Whiteparish Wood—only four miles from Blackmoor.

The Black Hairstreak larva likes mature and lichenous Blackthorn bushes, in thickets, over a fairly dry floor. These conditions are still fulfilled in Blackmoor. Actually, the most likely-looking brake (from which incidentally I obtained Brown Hairstreak larvae some years ago—the only time I have seen that species in the wood) was the one at the southern tip of Blackmoor. This is now largely destroyed by the intrusive power-line; and by the cutting-back of "scrub" as a necessary safety precaution at this corner. There are other quite suitable clumps.

The imago likes *narrow* rides (in contrast to the Brown Hairstreak which prefers open clearings); and there is no shortage of the flowers which it normally frequents.]

Strymonidia w-album Knoch (White-letter Hairstreak). Present but scarce. One or two specimens are seen in most years. The foodplants, species of Ulmus, are scarce in the vicinity.

Callophrys rubi Linn. (Green Hairstreak). Often common, but subject to considerable fluctuations in numbers.

Lycaena phlaeas Linn. (Small Copper). Common.

Aricia agestis Schiff. (Brown Argus Blue). Occurs sparingly.

Polyommatus icarus Rott. (Common Blue). Common.

Lysandra coridon Pod. (Chalk-hill Blue). Occurs occasionally in the fringes of the wood, just as it does at Whiteparish.

Lysandra bellargus Rott. (Adonis Blue). Used to occur in the meadow, now the property of General Fanshawe, adjoining the Winterslow Road; but I have not seen it for a number of years.

Celastrina argiolus Linn. (Holly Blue). Occurs sparingly.

Cupido minimus Fuessl. (Small Blue). Occurs freely on banks and in cuttings quite close to the Reserve: and so, in good years, occasionally and sparingly in the meadows bordering it.

Pyrgus malvae Linn. (Grizzled Skipper). Common.

Erynnis tages Linn. (Dingy Skipper). Common.

Thymelicus sylvestris Pod. (Common Small Skipper). Common.

Thymelicus lineola Ochs. (New Small Skipper). Probably quite common. Exists among the population of "small Skippers", but cannot be recognised without capture. This species was not known to be English until about 1890, when it was recognised in the marshes of the Thames Estuary. For a long time thereafter it was thought to be confined to Kent and the Fenlands. But I myself discovered and recorded it as follows: in 1926 in Hampshire and Hertfordshire; in 1927 in Surrey; in 1928 in Dorset and South Wilts.; and in 1929 in Somerset. All these observations, the results of a deliberate investigation, were recorded in "The Entomologist". It has since been found to occur in most of the south-midland and east-midland counties. Quite recently it was observed to be common on Pepper Box Hill; and it has also been reported near Westbury.

A test count by myself, in a rough pasture at East Grimstead in 1957, revealed it in the proportion of 1 to 5 to the other species of Thymelicus. In 1957, of three specimens caught casually at one spot in the Reserve (and subsequently released) one was *lineola*: it probably therefore exists there in much the same density as at East Grimstead.

Ochlodes sylvanus Esp. (Large Skipper). Common.

Hesperia comma Linn. (Silver-spotted Skipper). Reported by the late Major S. Maples from a field bordering the wood (probably the one which is now General Fanshawe's) in 1942, but not observed since.

Lepidoptera at Heversham

By Gaden S. Robinson

(concluded from page 278)

STATISTICS:

The total sample of 7,767 macrolepidoptera comprising 233 species was analysed in relation to the logarithmic series and Index of Diversity (q.v. Fisher, Corbet and Williams, 1943). The average number of individuals per species was 33·33 and the parameter x in the series was therefore 0·9942. This gave an index of dirersity (α) for the sample of 45·32 and a theoretical figure for n_1 (the number of species in the sample represented by only one specimen) of 45·06. The figure for n_1 actually observed was 37. For n_2, the number of species represented by two specimens, the theoretical figure was 22·4; that observed, 17. The calculations were continued for further values of n and the results tabulated on following page:

7,767 individuals in 233 groups: $x=0{\cdot}9942$, $\alpha=45{\cdot}32$.

	Calculated	Observed
n_1	45·06	37
n_2	22·40	17
n_3	14·85	19
n_4	11·07	13
n_5	8·81	11
n_6	7·29	11
n_7	6·22	8
Total	115·7	116

At first glance it might be assumed that as most of the "observed" figures differ widely from those calculated for a log.-series of the sample, this sample in fact fits a log.-series badly. However, when the figures are summed up to n_7, it will be seen that the fit is in fact excellent, almost exactly half the species being accounted for: thus half the species are represented by less than eight individuals in the sample, and the data obtained give a close fit to the logarithmic series.

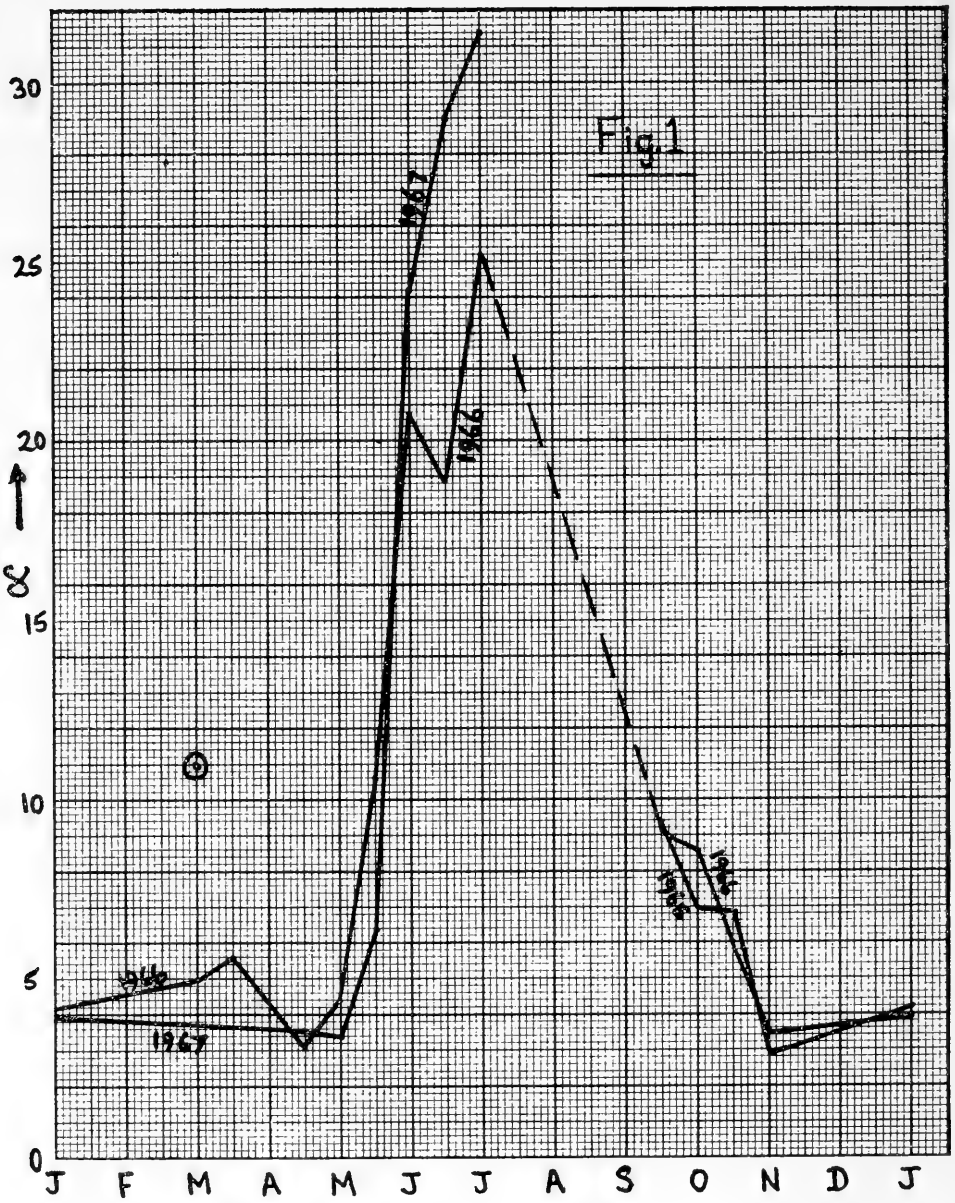
My daily trap records of macrolepidoptera were totalled up on the first and sixteenth day of each month; thus it was possible, from these fortnightly (or nearly) totals, to obtain the Index of Diversity for the samples taken in the first and second half of each month. A graph was drawn (Fig. 1) showing variation in α throughout the year in 1965, 1966 and 1967. This graph illustrates the great variation in α from month to month and from year to year.

The tabulated values of α used to draw the graph are given:

		1965	1966	1967
*January	(1st half)		4·2	3·95
March	(1st ,,)		5·0	11·0†
March	(2nd ,,)		5·6	
April	(2nd ,,)		3·1	3·55
May	(1st ,,)			
May	(2nd ,,)		10·3	6·4
June	(1st ,,)		20·8	24·2
June	(2nd ,,)		18·9	29·0
July	(1st ,,)		25·2	31·4
September	(2nd ,,)	9·4	9·1	
October	(1st ,,)	7·0	8·6	
October	(2nd ,,)	6·9	6·0	
November	(1st ,,)	3·0	3·5	

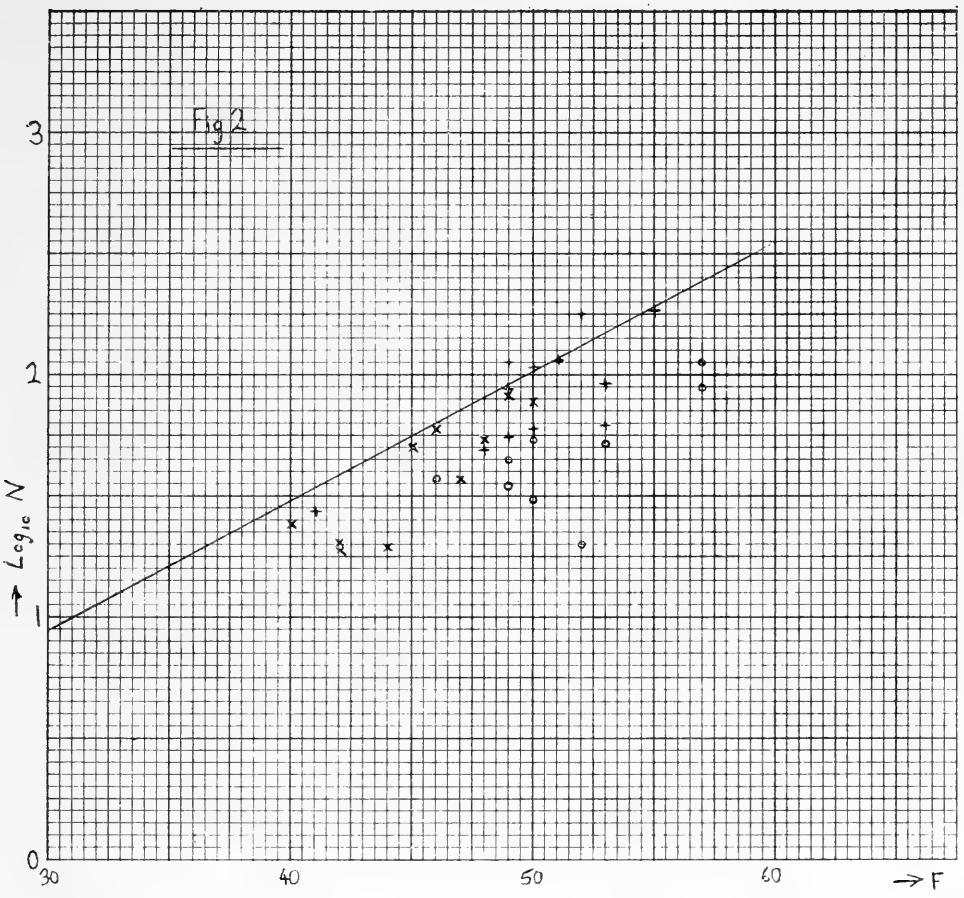
*An integrated total comprising 2nd half of Nov., Dec., Jan., and Feb.
†Inaccurate—catches too small for accuracy.

By correlation of the daily totals of macrolepidoptera caught with the minimum temperature for the night in question, it was possible to analyse the relationship between temperature and catches. Minimum temperature was recorded by means of a Six's max-min thermometer in a Stevenson screen about twenty yards from the trap. The correlation between weather conditions and insect activity has been studied in great detail by Williams (1940). Williams utilised a regression line to indicate the relationship. However, as the other factors affecting catches (moonlight and wind) both decrease the number of insects caught, it may be postulated that when the effect of these two factors is minimum, the "temperature-effect" will operate alone. Thus, if the logarithm of catches is plotted on a graph against the night minimum temperature, a series of maximum points should occur, and these be attributable to still, moonless nights.



A graph was plotted on this principle, and indeed, a series of maximum points did occur on windless, moonless nights, and these maximum points lay in a straight line corresponding to the formula $\log_{10} N = \frac{F-12{\cdot}5}{18{\cdot}75}$ where N. is the number of macrolepidoptera caught in one night and F is the minimum temperature in °F. for that night. Two points were found to "jump" above the line a little and from weather records I found that on these nights either cloud cover had disappeared towards the end of the night or a cold front had swept in, producing a sharp drop in temperature just before dawn.

I do not propose to reproduce this original graph drawn from data recorded in 1966, but I do propose to show how this method may be used



to compare different types of lamps used in traps. Fig. 2 shows a graph with the log. $_{10}N = \frac{F\text{-}12{\cdot}5}{18{\cdot}75}$ line drawn on it. The data were obtained in the early summer of 1967 to produce the points surrounding it. A series of figures was recorded using a clear lamp, as in 1966, and these are plotted on the graph using the symbol +. It will be seen that there is a series of maximum points close to the line and two "jumps". Comparison with those for a pearl-envelope lamp (symbol ×) shows that there is little or no increase in catches when a clear lamp is used. The significance of this observation is that the point-source theory (Robinson, 1950) does not apply below a certain threshold size. This may be explained by the simple physiological observation that the eucone eye of an insect subtends a large angle compared with the human retinal cone, and an insect probably receives the same visual image of both a pearl and a clear lamp.

A 500 watt mercury vapour lamp was used on several nights in 1967 and weather records were taken concurrently. It will be seen that the points (symbol o) fall well below those of the 125 watt lamps, and I puzzled over the explanation to this for some time. Finally, I realized that when a 500 watt lamp was used it increased the illumination of the walls of buildings surrounding the trap, and insects were being "attracted" to these as well as to the trap. Observation revealed that large numbers of moths were settling on the walls when a 500 watt lamp was in operation, but with a 125 watt lamp this never occurred.

I realize these figures are in no way conclusive, but I feel that this method is useful for comparing trap-sites, traps, lamps and localities. I feel I should admit that I kept weather records for most of the year and at no point in the year did the maximum points deviate from the line cited, at least, not noticeably so.

In conclusion, I should like to thank all those who made this project possible, especially Mrs. N. M. Chinn, Head of the Biology Department at Heversham, and to beg indulgence for my errors and omissions.

BIBLIOGRAPHY

Robinson, H. S. and P. J. M. *Ent. Gaz.*, **1** : 3-20. 1950.
Williams, C. B. *Trans. R. Ent. Soc.*, **90** : 227-306. 1940.
Fisher, R. A. C., Corbet, A. S. and Williams, C. B. *J. Anim. Ecol.*, **12** : 42-58. 1943.

Newcastle upon Tyne. 20.viii.1967.

The Large Tortoiseshell Butterfly *Nymphalis polychloros* L.

By H. G. Short

I read Mr P. B. M. Allan's articles on *polychloros* with great interest and am surprised at the amount of evidence for autumn pairing. However I still think that the instances which he quotes all have some suspicion of abnormality about them and that spring pairing is normal.

This is not an opinion, but is based upon experience, as I have on three occasions brought British stock through the winter and successfully paired them in the spring, whereas under the same conditions there has never been any sign of a pairing in the autumn.

In the account by Wykes, which he quotes, he appears to assume that when the butterflies suddenly appeared they had just reappeared from hibernation. In my experience this phenomenon of a sudden appearance of a number of a particular species, where previously none were visible, is not uncommon and must be due to a favourable combination of climatic factors.

My own experiments were carried out in a greenhouse which is not heated at all. It is not a plant house in the normal sense but is used almost exclusively for butterflies. It has more ventilators than usual: these are kept permanently open, the openings being covered with fine nylon net, and the remainder of the interior is also lined with cotton net to give the insects a good foothold. Glass is useless: the butterflies spend a lot of time battering themselves against it. The house runs E.-W. and the S. side is covered with slatted wooden blinds. With these arrangements the interior temperature is little higher than outside. I did keep records for a time and the difference is not more than 2-3°F.

When possible I use growing (potted) flowers for feeding my insects, but I have present pieces of foamed plastic, on saucers, soaked in sugar solution, and these are more patronised by Vanessids. (Honey is better but has the disadvantage that the plastic needs to be sterilised every day.)

On emergence in July, *polychloros* is active for about 18 days, both flying and feeding frequently, although like most other butterflies they spend long periods just sitting with wings outspread in the sun. There is then a marked diminution in activity with little interest in food. At this stage they congregate in groups in one corner of the roof, but even in sunshine there is little movement and few open their wings.

In September some of them will seek out lower places, under the staging, etc., and gather there, also in groups, to pass the winter. Some (a minority) will remain on the roof throughout the winter.

In the spring they begin to move on the first sunny day when the temperature reaches about 50°F., usually in March. As soon as I see any moving I put food out and this is soon patronised. They sometimes take a very long drink at this stage, but it is possible that water would do equally well.

As to pairing; this occurs quite soon after the insects move in the spring. I have never seen the commencement of the act (unfortunately I am only an amateur entomologist and have to earn a living in other ways) but union lasts for several hours, whereas for other species of summer butterflies I should regard 1½ hours as a long time. The three pairings I have seen have been on the roof.

Deposition of eggs usually occurs in two batches, a large one 2-3 weeks after pairing, followed by a smaller one a week or so later.

I have found that one must be patient to get eggs from a wild ♀ captured in the spring. It may be necessary to keep it for 3-4 weeks.

8 Millbourne Lane, Esher, Surrey. 3.ix.67.

Any Number Can Play

By Dr. R. G. Ainley

Professor Balfour-Browne's note in the October issue of The Record (p. 252) answered several questions which have puzzled me for some time, and prompted me to commit to paper a few of my own in the hope that readers of this Journal might answer them, or at least correct my misconceptions.

When I first became interested in Lepidoptera at about the age of eleven I remember being urged, by the few books I then possessed on the subject, to learn and use the Latin names because they were the same the world over (thus facilitating international communication), and because the organisation of species into genera and families followed the natural (evolutionary) affinities between different species. At the time this seemed an admirable arrangement. Disillusion came as my acquaintance with the literature expanded. It soon became apparent that the Latin names of some species could show a degree of geographical variation far surpassing that of the insect itself. For example, the butterfly I knew as *Lysandra bellargus* Rott. might be *Lycaena bellargus* to a German author and *Lysandra* (or again *Lycaena*) *adonis* to a French.

Similarly, I was puzzled a few years ago to read that someone had seen numbers of a butterfly called *Mesoacidalia charlotta* Haw. on the South Downs. My first reaction was that this must be an exciting new addition to the British List, until further enquiry showed it to be our old

friend *Argynnis aglaia* L., alias the Dark Green Fritillary. It might logically be concluded that the only nomenclature which is stable, and therefore unambiguous (at least in this country) is the vernacular one, unsystematic though it be. As is well-known, there have even been tidy-minded attempts to "systematise" this, resulting in such nonsensical neologisms as "The Brown Argus Blue".

Many similar examples come to mind; and it is difficult to see why anyone should imagine that biology, as a science or as a pleasurable hobby, benefits from such repeated changes in nomenclature. No-one has expressed the matter better than Professor E. B. Ford when, presumably with the law of priority in mind, he wrote of Kloet and Hincks' Check List, "Let us hope that it will not be unduly tampered with by those who seek to substitute old names for new, under the impression that they are contributing to science". (Ford, 1955).

Shall we call a given species *magnus, major* or *maximus*? Since the function of a name in this context is merely to signify an entity which has a particular set of characteristics, so that whenever the name is used the entity being discussed can be recognised, and its characteristics will be known (or can be found out), it matters not one jot whether we choose to call it *magnus, major* or *maximus, provided everyone agrees to call it by the same name.* If the last condition is not fulfilled, the function of the name as a means of communication breaks down, as so frequently happens under our present system thanks to those who appear to be more enthusiastic about names (and the artificial "rules" pertaining to them) than about the creatures for which the names stand.

A different problem, puzzling to me as a non-expert, is to know by what criteria a given number of species are placed in the same genus. It is not difficult in most cases to decide what constitutes a species, because there are recognised criteria to guide the decision. (I realise there are exceptions to this, but they are relatively few.) But are there similarly-agreed guidelines for determining generic status? If so, what are they? If not, is not the choice of the characters used to group species into a genus largely arbitrary, depending on whether the greatest emphasis is placed on, say, wing-venation or on genitalia or scale structure or any other character? If the latter is the case, this may account for the phenomenon of "genus-splitting", which results in the introduction of yet more new names.

To give an example, in my youth I assumed, perhaps naively, that the species *paphia* L., *cydippe* L., *aglaia* L., *lathonia* L., *selene* Schiff., and *euphrosyne* L., were placed together in the same genus, *Argynnis,* because they form a group with obvious natural similarities. In one recent check-list, however, these six species are redistributed among no less than five different genera, giving us *Argynnis paphia* L., *Fabriciana adippe* Rott., (=*cydippe* L.), *Mesoacidalia charlotta* Haw. (=*aglaia* L.), *Issoria lathonia* L., *Clossiana selene* Schiff. and *C. euphrosyne* L. There may be sound reasons for these changes; if so, I should be interested to find out what they are. Continuing this trend *ad absurdum,* each species may soon be given a generic name peculiar to itself, the concept of a genus will then cease to have any meaning, and binomial nomenclature will also have lost its point. This may seem a ridiculous suggestion. Nevertheless, as more and more is discovered about the anatomy, physiology and biochemistry of insects (or any other Class), the more differences will inevitably be revealed between species at present classified in the same

genus; and such differences will all provide grist for the mills of the genus-splitters.

It is probably quite unrealistic to expect biological material to fit tidily into an elaborate system of categories with the same precision as that attained by chemists arranging elements in the Periodic Table according to their atomic weights. Yet it seems to me that many "systematists", consciously or subconsciously, have an unshakeable conviction that it can be done.

Until I read Professor Balfour-Browne's article I had innocently imagined that there must be an international body in existence which met at intervals to consider evidence bearing on taxonomy, and accordingly issued internationally-agreed revisions. How wrong I was! If the professionals are confused, what hope is there for me?

As regards entomology, would it be feasible for the editors of all the British journals in the field to agree on a single nomenclature (possibly using Kloet and Hincks as a basis) and refuse to publish any names other than those agreed? This move might at least promote stability in the British literature.

Those who have been at the game longer than I, would no doubt tell me that all this is very well-trodden ground. Some will have worked out their own philosophies, while others will merely have ceased to care. I would welcome the views of the former (e.g., how do they go about arranging and labelling their collections?). The latter, wisely, would merely advise me to stop worrying.

REFERENCE

Ford, E. B. 1955. Moths, p. xvi. Collins, London.

I have been taken to task by one of the authorities for having published Professor Balfour Browne's article, but my bloody head is still unbowed; who am I, an amateur, to contradict the views of a well known professor?

I am a whole-hearted supporter of the use of scientific names, as I feel sure Dr. Ainley is; it is the, to us, unnecessary complication of the rules to which we are opposed. Personally I would favour the broadening of the characters of a genus so as to include a divergent species in preference to the erection of a monospecific genus to accomodate it, and this view is not shared only by amateurs. My good friend Dr. A. B. Klots, who is engaged on a classification of the North American Crambidae, wrote to me in a recent letter: "But at least I will be publishing on the basis of practically all available material. Despite this there are several species for which I have no ♀♀, although plenty of ♂♂! The number of undescribed species is not as large as one might suppose, although there will be a lot of them. My really greatest worry is the generic classification. There are quite a number of species that simply will not fit into any existing genus, but I hate the idea of erecting a long list of monospecific genera for them".

I share Dr. Ainley's bête noir, *Mesoacidalia charlotta* Haw. Assuming that there is a good reason why Linnaeus's *aglaia* had to be dropped (possibly because it was found to refer to a different species) that is good enough, but if it is indeed impossible to include *charlotta* Haw. in *Argynnis*, why select a generic name which brings to mind a small geometrid moth

for this large butterfly? One can well appreciate that there are many difficulties in the way of old errors which have to be corrected, but perhaps it would be best if some enlightened person would write a readable article entitled "Nomenclature without Tears". Any offers?—Ed.

A Holiday in Ross-shire, Scotland in late July 1967 with notes on the Lepidoptera

By E. P. Wiltshire, C.B.E., F.R.E.S.

After 35 years collecting abroad, I returned to reside in this country in April 1967 and wondered whether I would collect its lepidoptera as keenly as I had done in 1928-32. Commuting to my new job in London left little or no time for bug-hunting. However, a projected holiday in late July in the neighbourhood of Contin, Ross-shire, Scotland (57.60 N., 2.80 W.), famous for salmon, made me consider whether it would be worth while taking a net and lamp. The fact that Scotland was *terra incognita* for me, if nobody else, decided me in favour of doing so. And I am glad I did, although I deliberately avoided going to the usual places where Scotland's lepidopterous specialities are sought out and often found. I think my notes made near Contin between 23rd July and 1st August may interest readers, not so much of the very remarkable catches, of which I believe there were none, as because the pages of this magazine have not, to my knowledge, often recorded observations from this area.

The Craigdarroch Hotel, a former salmon lodge and still most frequented by fishermen as well as gourmets, lies in a sheltered position on the edge of an oak and birch wood below the crags of Cnoc Dubh which means, I was told, "the black hill". The name Craigdarroch, I was also informed, in Celtic means "Crag of oak trees", very apt in the circumstances, although the Forestry Commission has recently planted conifers extensively. From the old name one infers that the oaks are indigenous, not planted here. By the way, "Darakht" in Persian means "tree", so it was philologically interesting to find that "Darroch" in Celtic meant "oak".

A mile from the hotel, under the same wooded slopes, was a small trout-loch with lots of alder, called L. Achilty. The height above sea-level was about 300 ft. and the highest point of Cnoc Dubh was no more than 750 ft., so the area I worked was not a highland one; the specialities of 1000 ft. or more were not to be expected.

The highest mountain the the vicinity was Ben Wyvis (3000 ft.) about a dozen miles away. Had the weather been more settled, I might have climbed it. As it was, beyond a stroll up a pleasant stream-side on the western lower slopes of this mountain, near Inchbae, which took me no higher than c. 800 ft., I confined my activities to the neighbourhood of Contin, and particularly Loch Achilty. It proved possible to plug in a mixed lamp and attract moths in the hotel grounds on three nights, Most of these moths were denizens of the oak and birch wood, the trees of which were beautifully shaggy with lichens; its undergrowth was heather, ling, bilberry and grasses. Not till 22.30 hours did it begin to get dark. One of the moths captured in fair numbers and good condition in this way was *Alcis jubata* Thunb., the northernmost recorded capture of this species in the British Isles, so Mr. E. C. Pelham-Clinton informs me. The northerly

records previously known to him were from West Inverness and Forres, Morayshire; it is also known, of course, from Argyllshire, Kirkudbrightshire, Roxburghshire and Berwickshire in Scotland.

A day-time walk up to the top of Cnoc Dubh provided an agreeable surprise, for there and there alone in the Contin neighbourhood, were a cluster of mosses with their limited and characteristic flora and fauna. Besides sphagnum moss, the flora consisted of Purple Moor-grass (*Molinia caerulea*), Cotton-grass (*Eriophorum angustifolium*), much heather (*Erica*) and more ling (*Calluna*) and quite a lot of Sweet-gale (*Myrica gale*). On the rather bare adjacent rocky slopes constituting the summit of Cnoc Dubh, a few stunted bushes of birch (*Betula*), sallow (*Salix*), and one small juniper showed that the hill-top was by no means above the tree-line, if too weather-beaten to be forest-clad.

A fair number of the Large Heath (*Coenonympha tulli scotica* Stgr. were flying on these mosses. This was not surprising, but I found it curious that its congener, the Small Heath (*C. pamphillis*) which was flying with it in smaller numbers, was similarly limited, for I found it nowhere else in the neighbourhood, where the only common butterfly was *Erebia aethiops caledonia* Verity, the Scotch Argus, which first emerged, and then in numbers, on 30th July on grassy slopes at 400-600 ft.

The other surprise on the top of Cnoc Dubh was a day-flying *Autographa festucae* (L.), the Gold Spot, whose vivid orange-red thorax-tufts and rosy body-under-side, made me expect it, when I first saw it flying in rapid dashes over the heather of the moss, to be perhaps some Tiger-moth (Arctiid). Having identified it, the absence of its usual marsh-foodplants made me wonder whether it had really bred there or perhaps elsewhere. Could it perhaps have fed on *Myrica gale*? Or could it have flown up across the steep woods from the shores of the loch 450 ft. below, where some of the usual foodplants grew? Though I revisited the mosses by day, I saw no further example of this moth. (The wing-markings showed that it was not the recently separated "twin-species", *A. gracilis* Lempke.)

Of course other *Autographa* species are sometimes seen flying by day; and indeed, I noted a further example of this habit when I took at Inchbae a fresh *A. interrogationis* (L.) on a thistle-flower.

The following is a complete list of the species taken on my holiday in this part of Scotland, with a few comments on the more interesting kinds. (In nomenclature, for the Noctuidae and Geometridae, I follow, where possible, Dufay (1961), Boursin (1964) and Herbulot (1962-3), with an an occasional improvement suggested by such local specialists as Mr. D. S. Fletcher. I believe these names to be the correct ones, though of course experience shows that finality is hard to achieve!) "(G)" indicates that the identity was confirmed by a genitalia-examination.

List

Polyommatus icarus L. Not common: Cnoc Dubh, 750 ft., 24.vii. Inchbae, 700 ft., 31.vii.

Aglais urticae L. Contin, 30.vii.

Mesoacidalia charlotta Haw. Local at about 600 ft. above the Torrachilty Reservoir on rough, rather bare, ground, 25.vii.

Maniola jurtina L. Widespread but not common. Torrachilty, at 600 ft., 25.vii; Cnoc Dubh, c. 700 ft., 29.vii; Contin, 30.vii.

Erebia aethiops caledonia Verity. Widespread on fresh, grassy, bushy slopes, 400-600 ft. (i) Contin; (ii) Torrachilty Reservoir & R. Conon banks, common; (iii) Inchbae, 700 ft. Only males seen, and none before 30.vii.

Coenonympha pamphilus L. Only seen on the Cnoc Dubh mosses at 700-750 ft., 26 and 29.vii. The three examples caught were rather small and of the typical subspecies, which is of course rather variable. (Subsequently I studied at Tring, in the R.K.C. collection, examples from the Hebrides: a nice fresh series taken about 10 years ago by Messrs. Bradley & Fletcher (see The *Entom.*, **91**, p. 126). These were presumably topo-types of "subsp. *rhoumensis* Harrison" described in *Ent. Rec.*, **60**, p. 111, 1948; but they disagreed with Harrison's diagnosis and seemed to me to be normal forms, if slightly different from my Ross ones; the possible invalidity, however, of this subspecific name need not be discussed in the present context, and is best left to a student of the genus *Coenonympha* and of the Hebrides.)

Coenonympha tullia scotica Stgr. Fairly common on the Cnoc Dubh mosses, 700-750 ft., 26 and 29.vii. Some ♂♂ were past their best on the first visit.

Pheosia gnoma F. One ♀, to light, 30.vii.

Lophopteryx camelina L. One ♀, beaten from birch foliage at 600 ft., a pale brown form.

Ochropleura plecta L. Several to light, 27.vii.

Noctua janthina Schiff. to light, 30.vii.

Noctua pronuba L. Several to light, 30.vii.

Paradiarsia porphyrea Schiff. 300-750 ft., on heath, in woods, and on hill-tops, by night and day.

Diarsia mendica F. and *brunnea* Schiff. (G), to light.

Amathes ditrapezium Schiff., *triangulum* Hufn., *sexstrigata* Haw., and *baja* Schiff., to light.

Mamestra oleracea L. to light, 30.vii.

Cerapteryx graminis L. to light, common.

Mythimna impura Hübn. to light.

Blepharita adusta Esp. One ♀ to light, Leuchart Power Station, an almost black example.

Apamea monoglypha Hufn. ab. *aethiops* Tutt. to light, 30.vii.

Oligia strigilis L. and *latruncula* Schiff., to light, 24.vii.

Plusia chrysitis L. to light.

Autographa festucae L. One ♂, flying by day, Cnoc Dubh moss, 26.vii.

Autographa interrogationis L. One ♂ on a thistle-head, c. 700 ft., near Inchbae, 28.vii.

Autographa pulchrina Haw. to light, 27.vii.

Hypena proboscidalis L. to light, 30.vii.

Zanclognatha nemoralis F. to light, 30.vii.

Palimpsestis duplaris L. Frequent to light, also beaten from birch branches at 600 ft., vaguely marked, dark forms.

Entephria caesiata Schiff., to light, 27 and 30.vii.

Calostigia olivata Schiff. to light, 27.vii.

Calostigia pectinataria Knoch. Very common to light.

Coenotephria ocellata L. to light, 30.vii.

Eulithis populata L. beaten from vegetation at 600 ft., 27.vii.

Chloroclysta citrata (L.) (G), to light, 27 and 30.vii.

Chloroclysta truncata (Hufn.) (G), to light, 24 and 30.vii.
Thera cognata Thunb. to light, 27 and 30.vii.
Eupithecia goosensiata Mab. (G), Cnoc Dubh, 700 ft., 27.vii.
Eupithecia icterata cognata Steph. to light.
Perizoma alchemillata (L.) (G), 24.vii, to light.
Xanthorhoe montanata Schiff. to light, 24.vii.
Xanthorhoe fluctuata L. to light, 30.vii.
Scotopteryx plumbaria F. (G) Cnoc Dubh, 29.vii. Besides the structural examination, the late date pointed to this being *plumbaria* rather than the more desirable *mucronata scotica* Cockayne. Superficially it rather resembled the latter.
Epirrhoe alternata Mill. Contin, 30.vii, flushed from bushes.
Camptogramma bilineata L., 27.vii, etc.
Anaitis plagiata L. to light, 30.vii.
Sterrha aversata L. to light, 27.vii.
Opisthograptis luteolata L. to light, 24 and 27.vii.
Alcis repandata L. (G) common to light.
Alcis jubata Thunb. 24.vii, one ex. to light; 27.vii, males common to light. The northernmost known capture in Britain.
Cabera pusaria L. to light, 27.vii.
Campaea margaritata L. Common to light; the first ♀ on 30.vii.
Gnophos myrtillatus Thunb. One ♀ to light, 27.vii.
Aphomia sociella L. Fresh and fairly common, at dusk on wing over heathery open ground, Achilty, 24.vii.
Agriphila straminella D. and Schiff (=*culmella* auct. nec L.), *Eucosma brunnichiana* Fröl, to light.

I am grateful to Messrs. Fletcher, Pelham-Clinton and Bretherton for assistance in identifying some of the above.

REFERENCES

Boursin, C. 1964. Les Noctuides Trifinae de France et de Belgique (*Bull. mens. Soc. Linn. Lyon*, **33**, 6. 204-240).
Dufay, C. 1961. Faune terrestre et d'eau douce des Pyrnénées-Orientales : F. 6, Lepidopteres. 1. Macrolepidopteres. (Univ. de Paris. *Laboratoire Arago, Banyuls-sur-mer*).
Herbulot, C. 1962. Mise à jour de liste des Geomtridae de France. (*Alexanor*, **2** and **3**).

Geology as an Ecological factor in the Distribution of an insect

By Alan E. Stubbs

(continued from page 293)

DISTRIBUTION DATA

Dorset. v.c. 9

1. Swanage. Downs. Sir Christopher Andrewes. (Either Chalk downs north of the town or the Purbeckian limestone downs to the south).
2. Corfe Castle. Chalk downs. Sir Christopher Andrewes. (Chalk).
3. Winspit Cliffs. (Worth Matravers) 28.vi.1918. H. W. Andrews. Coll. (Purbeck and Portland beds which are predominantly limestones). No county is given on the data label, just 'Winspit Cliffs'. Limestone grassland was almost certainly the habitat.

4a. East Bexington. 8.vii.1951. Grassy bank and fields. C. D. Day. (Seaward slope behind Chesil Beach. Fullers Earth, a thick series of clays with about 25 ft. of bands of argillaceous limestone in the middle. The slope is strewn by Forest Marble which has broken away from higher ground. Head occurs at the base of the slope, presumably composed of a reconstituted deposit of the above mentioned materials.)

4b. East Bexington. 23.vii.1951. Grasses. E. C. M. d'Assis Fonseca in company with Dr. C. D. Day. (Geology and location as 4a).

E. SUSSEX. v.c. 14

5. Seaford. 15.vi.1890. In Verrall. (Probably Chalk, though superficial deposits occur locally on the Downs).

E. KENT. v.c. 15

6. Wye. July 1966. Chalk downs. Sir Christopher Andrewes. (Chalk).
7. Temple Ewell ♂ ♀ 10 and 14.vii.1939. Very rough, long grass with shrubs, mostly wayfaring trees and beech scrub. Soil very shallow over Chalk with large flints. G. Waller. (Upper Chalk possibly with phosphatic bands).
8. Ringwould. 16.viii.1949. Long grass on Chalk. E. C. M. d'Assis Fonseca. (Upper Chalk).
9. St Margaret's Bay. 31.vii.1955 and 24.vii.1957. Long grass on Chalk. E. C. M. d'Assis Fonseca. (Upper Chalk).

W. KENT. v.c. 16

10. Darenth Wood, 1851. Habitat unknown, quoted by Verrall. (Plateau gravels, Eocene sands and clays, and at the north end Upper Chalk). Verrall could not find the species in 1870. It is just possible that there were open clearings in 1851, perhaps with chalk grassland, and that these had become overgrown by 1870, since woodland seems to be an unusual habitat.
11. Farningham. 15.vii.1935. Chalk downs. H. W. Andrews Coll.: (Chalk).
12. Eynsford. 12.vi.1943. 30.vi.1943. Chalk downs. H. W. Andrews Coll. (Chalk).
13. All-Hallows on Sea. 15.vii.1939. Grassy herbage, Thames marshes. H. W. Andrews. (Alluvium under marshes, or adjacent higher ground London Clay. Sea walls could be constructed of imported materials).
14. Shoreham. 4♂♂, ♀ 19.vi.1966. Chalk grassland. A. E. Stubbs. (Pure Chalk of *lata zone*, Middle Chalk). Chalk grassland on steep west facing slope, dominated by *Bromus erectus* and sheltered by yews.
15. Shoreham. ♂ 19.vi.1966. Chalk grassland. A. E. Stubbs. (*planus* zone of Upper Chalk which contains phospate rich rock bands at certain horizons). Chalk grassland with occasional bushes, east facing slope. *Bromus erectus* dominant.
16. Shoreham. 18.vi.1961. One, sweeping chalk grassland. A. A. Allen. (Chalk).
17. Trottiscliffe Down. 11.vi.1964. Two in chalk grassland. K. C. Side. (Chalk).

SURREY. v.c. 17

18. Coulsdon. 11.v.1911. Habitat unknown. N. D. Riley. B.M. Coll. (Probably Chalk, though superficial deposits partially cap downs and floor valleys.

19. Coulsdon. Chalk grassland. L. Parmenter. (Chalk).
20. Woldingham. Chalk grassland. L. Parmenter. (Chalk).
21. Riddlesdown. 29.vi.1964. One sweeping Chalk grassland. A. A. Allen. (Chalk).
22. Nr. Gomshall. ♂ 12.vi.1966. Chalk grassland. A. E. Stubbs. (Relatively pure chalk of lata zone, Middle Chalk). Species rich chalk grassland with plentiful scattered scrub, south facing escarpment of North Downs. The 6th editions One Inch Ordnance Survey Map shows this area as woodland, which supports field observation that the chalk grassland is relatively young.

HERTS. v.c. 20

23. Nr. Felden. 18.vi.1893. In Verrall and B.M. Collection. (Felden is on Clay-with-Flint, but the Chalk forming the Chilterns has abundant outcrop in the district).

BEDS. v.c. 30

24. Sharpenhoe. 18.vi.1925. 'B.S.W.'. (? B.S. West). H. W. Andrews Collection. (Chalk of Chiltern escarpment).

OXON. v.c. 23

25. Nr. Burford. J. E. Collin. (The Burford District includes Inferior Oolite, Fullers Earth—mainly Chipping Norton Limestone, Great Oolite and Forest Marble. All these beds are mainly limestone but the Windrush Valley contains outcrops of Middle and Upper Lias clays and impure limestones, and alluvium floors the valley.)
26. Yarnton. J. E. Collin. (District with Terrace Gravels and Oxford Clay forming high ground and alluvium underlies the low ground).

GLAMORGAN. v.c. 41

27. Oxwich Bay. J. E. Collin. (Calcareous dunes backed by higher ground of Carboniferous Limestone).

S. LINCS. v.c. 53

28. Ancaster. 10.vi.1952 to 10.vii.1952. Manchester Museum Coll. (Lincolnshire Limestone—a local representative of the Inferior Oolite Series).
29. Cranwell. 10.vi.1952 to 10.vii.1952. Manchester Museum Coll. (Great Oolite Series, consisting of clay, limestone and marl, but in close proximity there are outcrops of the underlying Lincolnshire Limestone and the overlying Cornbrash limestones and marly sand.)

S.W. YORKS. v.c. 63

30. Roche Abbey, Nr. Maltby. vi, vii, viii, 1965. Scrubby, grassy slopes. P. Skidmore. (Magnesian Limestone).
31. Sprotborough, Doncaster. vi, vii, viii, 1965. Scrubby, grassy slopes. P. Skidmore. (Magnesian Limestone).

NO DATA

(a) 'W. Clifton Collection' in B.M. Coll. Mr. Clifton lived at Fulham, London.
(b) Ten specimens. Hope Department Coll., Oxford. All from the old Entomological Club Coll.

NEGATIVE INFORMATION

WILTS. v.c. 7 and 8

Sir Christopher Andrewes has never met with the species in his home county.

East Anglia

Mr. Collin has never met with the species in his home region. Mr. Durrant, recorder for Norfolk, has not seen it in thirty years collecting. He checked the Morley Collection at Ipswich Museum and the Morley and Atmore list of Diptera of Norfolk and Suffolk without locating any records.

Foot and Mouth Disease

A request by the Nature Conservancy.

Owing to the outbreaks of foot and mouth disease the Nature Conservancy strongly requests the public to keep away from National Nature Reserves in England, Wales and Scotland. Permits for Reserves are also being suspended for the time being.

While the Nature Conservancy regrets the need for these measures it wishes to co-operate with farmers and landowners, and believes that the public will also wish to refrain from doing anything which might encourage further spread of the disease.

Annual Subscriptions

For 1968 the annual subscription in the British Isles and the Commonwealth will remain at 35/-, post free, and £2, post free, for other countries. They are due by 1st January to the Hon. Treasurer, Mr. L. Parmenter of "Woodside," Pinewood Road. Ferndown, Dorset, who would be pleased to supply banker's order forms.

PROMPT PAYMENT SAVES POSTAGES

Once again there has been an increase of over 50 new subscribers for this independent journal which is run on a non-profit basis. We are pleased to welcome new contributors to the list which in the past ten years has totalled 332. The pleasure you receive in reading and contributing to the journal should be extended by its introduction to other entomologists. There are still schools, colleges and societies that do not receive the journal. Give them the chance to add it to their library by arranging for specimen copies to be sent to your local society or old school or better still place an annual order as an introduction. Friends, correspondents and young enthusiastic acquaintances may not have seen the magazine, Your introduction may well bring much pleasure to them. It is to everyone's advantage that the circulation should continue to expand to enable the demand for more pages and illustrations to be met.

Notes and Observations

The Pearly Underwing.—As there seems to be a scarcity of certain moths and butterflies this year, it may be of interest to record that on 23rd September 1967, I found a male *Agrotis saucia* Hübn. (*Peridroma porphyrea* Schiff.) asleep in my house at Bishop's Stortford, Hertfordshire.—P. B. M. Allan.

CRYPTOBLABES GNIDIELLA MILLIERE AND OTHER SPECIES IN SOUTHAMPTON.—This year I have been working a mercury vapour light trap in the middle of Southampton, about half a mile from the docks. The most interesting capture was on the night of 17th July, a single fresh specimen of *C. gnidiella* Mill.; as far as I know, there have been three previous British specimens, all bred from larvae. In 1936, Mr. S. Wakely bred one from a Jaffa orange imported from Cyprus (Entom. **70**: 21). In 1961, Mr. R. M. Mere bred one from a navel orange imported from Spain (Ent. Gaz. **12**: 172). A third specimen was bred also by Mr. Wakely from a pomegranate on 2nd December 1962 (apparently unrecorded). The moth is a native of the Canary Islands and of the Mediterranean area.

Another dockland species was *Ectomyelois ceratoniae* Zell., four specimens on different nights from 24th July to 22nd August.

Among the natives, *Isophrictis tanacetella* Schrank was common and both *Pammene aurantiana* Staud. and *Ptycholomoides aeriferana* H.-S. were in evidence. — Rev. D. J. L. AGASSIZ, St. Matthew's Vicarage, King's Park Road, Southampton. 26.x.1967.

PERINEPHELE PERLUCIDALIS HÜBN. AND PALPITA UNIONALIS HÜBN. IN SUFFOLK.—On 25th July 1967, I was collecting in the Walberswick Marshes with Mr. R. R. Cook of Romford, when a specimen of *Perinephela perlucidalis* Hübn. came to my sheet. I had previously taken this species at Wood Walton in 1963, where it was first discovered by the late Mr. Robin Mere in 1951, and in 1965 I took a specimen in Wicken Fen, but this is the first time I have heard of it from Suffolk.

Whilst looking at my mercury vapour trap at about mid-night on 21st October, I noticed a very shiny white moth sitting on some herbage near the trap. I at once thought it looked like *Palpita* (*Margaronia unionalis* Hübn. and on examination it proved to be this species. There was a second specimen present when I opened the trap on the morning of 23rd October. Both specimens are in very fresh condition and there is little doubt that they bred locally. This is the first record of the species from Suffolk although it has been recorded from Norfolk and Essex.—H. E. CHIPPERFIELD, The Shieling, Palmer's Lane, Walberswick, Southwold, Suffolk. 2.xi.1967.

PLUSIA CHALCITES ESP. IN SOMERSET. — On examining my mercury vapour light on the morning of September, 26th 1967, I was pleased to see a fine example of *Plusia chalcites* Esp. at rest on one of the vanes of the trap. This rare migrant has only once previously been recorded from Somerset, in September 1956, when I was lucky enough to take one in Minehead.

Single specimens of *Laphygma exigua* Hübn. were seen in July and August and *Leucania vitellina* Hübn. in September and October.

Apart from the above, it appears to have been a disappointing year for migrant Lepidoptera. *Vanessa atalanta* L. was quite common in September but did not put in an appearance until early August and even *Plusia gamma* L. has been seen in less than average numbers.—H. M. CHAPPEL, The Old Rectory, Minehead, Somerset. 14.xi.1967.

CELASTRINA ARGIOLUS L. IN 1967: AN EARLY DATE AND AN UNUSUAL PABULUM.—I am happy to say that the holly blue has had another good season here. Admittedly, fewer were actually seen than last year (cf. antea: 23), but almost certainly that is because during both the 1967 flight-periods there were longish spells of unsuitable weather; whenever in its season the day was sufficiently fine, the butterfly seldom failed to show itself. The first was noted on the (to me) extraordinarily early date of 25th March, when Mr. Dudley Collins, on a visit here, saw one in the garden. I gather this is by no means unparalleled, yet I think it can hardly be a common occurrence in a not noticeably advanced spring, the more so as no other was seen here (by me at least) until the beginning of May; however, that is not surprising, since April was a very inclement month.

For the southern suburbs, Mr. Collins noted very good numbers at Carshalton Beeches in at any rate the first brood. Of this he observed in his garden a female ovipositing on firethorn (*Pyracantha*), a recorded but seemingly unusual foodplant. The resulting larvae were quite numerous, and several were often on view at a time feeding on the young unripe and still green berries—at first about the bases, later boring in and more or less hollowing them out. This mode of feeding, with the general avoidance of leaves as pabulum, is much like what obtains with the more usual foodplants — holly and ivy — except that there it is the flower buds, not the young fruits, that serve; the choice being apparently determined by what is available at the time. The pupae were not to be found, but there was less opportunity for observation after the larvae had fed up.—A. A. ALLEN, 63 Blackheath Park, London, S.E.3. 2.xi.1967.

Obituaries

ARTHUR MOREL MASSEE, O.B.E., D.Sc.(Lond.), F.R.E.S.

By the death of Dr. A. M. Massee on 14th September, after a short illness, at the too early age of 68, British entomology has lost one of its leading lights, and naturalists everywhere a truly staunch champion and fighter in the cause of conservation. Despite a robust constitution he had been in delicate health for a number of years, perhaps due in some measure to the toxic chemicals with which his work brought him into constant contact. Nevertheless, his recent recovery from a very severe bout of illness appeared so complete, that the news of his death came as all the greater shock to his many friends.

Born on 2nd December, 1899, of solid Kentish yeoman stock—his father was George Massee, the Kew mycologist—he was educated at East Sheen Grammar School and then took up horticultural work with the firm of Edward Burney at Maidstone. Towards the end of the 1914-18 war he served in Flanders; later he attended a course of Economic Entomology under Professor Lefroy at Imperial College, London University, where he gained his Doctor of Science degree. In 1921 he entered on a distinguished career as Research Entomologist (dealing with fruit and orchard pests) at the well-known East Malling Research Station, which he pursued most successfully for 40 years. Here he carried out a great deal of important and valuable work, earning him wide recognition; and wrote the standard text-book on the subject, which he revised completely for the new edition not very long ago. He became in particular an authority on the Eriophyid mites—among the most insidious and resistant of fruit-tree pests. For

outstanding contributions in his special field he won the O.B.E. in 1951 and the Ridley Gold Medal in 1953. Already a fellow of the Royal Entomological Society, he also joined the South London Entomological and Natural History Society, of which he was President for a term; was a founder-member of the Kent Field Club; and served tirelessly on various committees, etc., having to do with the preservation of our fauna and flora. His retirement in 1961 led to little slackening of his activities (except when necessitated by poor health) and to none at all in zeal and zest for his lifelong pursuits. The pity is that he was granted so few years in which to enjoy it.

As with so many of us, the Lepidoptera were his earliest loves, but while still a boy he was 'converted' to the Coleoptera and remained so all his life—an interest overshadowed only by that of his favourite group which he later took up, and with which his name will always be specially associated: viz., the Hemiptera-Heteroptera or 'plant bugs'. It was in this Order that he went furthest and built up what is probably about the finest, most complete and beautifully-mounted collection of the British species ever made. His setting was impeccably neat and tidy and he had a low opinion of those who could not be bothered to set well, on the perfectly good grounds that (aesthetic considerations apart) badly set insects are harder to recognise and determine accurately. He was not a systematist by inclination, leaving to others the description of even those new species that were his own discoveries (e.g. *Psallus masseei* Woodroffe). His great flair was for field-work, the tracking-down of rare or little-known species and their habits and life-histories, ecology, etc.; and he specially delighted in assembling as many records as possible for his home county and parish. In this too he succeeded brilliantly through sheer hard work and perseverance over the years; in 1963 he was able to list 445 species for Kent (more than are known from any other county and over 80 per cent. of the British list) and some 250 (or half of the British list) for East Malling. Among the rarer species of bugs that he turned up in some numbers in Kent are *Aradus aterrimus* Fieb., *Holcostethus vernalis* Wolff, *Eurydema dominulus* Scop., *Henestaris halophilus* Burm., *Lasiosomus enervis* H.-S., and *Hallodapus montandoni* Reut.; whilst only two years ago he added *Monosynamma maritima* Wagn. to the British list, also from Kent.

His discoveries are recorded in innumerable notes and papers spread over many years, published mostly in the *Entomologist's Monthly Magazine*. Besides week-end trips and holidays in the New Forest, Cornwall, Scotland, etc., his professional duties—or conferences and the like—often took him to distant places, where he would take advantage of any spare time to collect. He was, of course, extremely favourably situated for his pursuits, living within easy reach by car of such classic hunting-grounds as Darenth Wood, the Sevenoaks district, Cobham Park, the Thames and Medway marshes, Deal and Sandwich sandhills, Blean and Ham Street Woods, Romney Marsh, Wye and Charing Downs, Folkestone Warren, Dungeness and many more. He added numerous species of beetles to the Kent fauna (the curious rare and very local stick-like weevil *Lixus paraplecticus* L. being a good example), and the coleopterous 'specialities' that he took in the county—mostly, at one time or another, in some plenty—include, besides this, *Emus hirtus* L., *Triplax lacordairei* Crotch, *Gnorimus nobilis* L., *Agrilus viridis* L., *Lytta vesicatoria* L., *Lagria atripes* Muls., *Obrium brunneum* F., *Labidostomis tridentata* L., *Phaedon*

regnianus Tott., *Tropideres niveirostris* F., *Polydrusus sericeus* Schal., *Liparus germanus* L., *Anthonomus chevrolati* Desbr., *A. cinctus* Redt.

Dr. Massee made full use of his steadily growing influence, and of all the support he could muster, in the struggle against those destructive agencies that threaten the countryside and its wild life—from the Forestry Commission's depredations and ill-conceived local-authority schemes to the wide use of high-toxicity sprays. In his work with insecticides he lost no chance of urging most forcibly the danger—indeed the futility—of large-scale drenching with deadly and persistent poisons, showing how again and again the final result was worse than the original state because of the development of resistant strains of pests. (It is to be hoped that a modicum of his good sense has at last begun to penetrate the thick skulls of the advocates of 'saturation-killing'.) We believe it is due almost wholly to him that the pernicious practice of spraying all rural roadsides and hedgebanks with weed-killer was abandoned in Kent (and, one hopes, elsewhere too). The value of his campaigning in these matters cannot yet begin to be estimated.

Massee was a man of forthright views, which he would often express with a disconcerting bluntness; the finer shades, the subtler nuances, or any sort of dissembling were not for him. He had the no-nonsense, down-to-earth approach of the countryman born and bred. His personality might be described as astringent in the better sense. His tongue could have a rough edge, and some were put off by a certain habitual gruffness of manner which might be mistaken for boorishness, but this was only on the surface and his essential kindliness and humanity shone through at least on further acquaintance. He had, as he freely admitted, no time or taste for the social graces, literary niceties, or high culture; true breeding and scholarship in others, however, he held in deep respect, and his admiration for the great men in entomology was unbounded. Lepidopterists (like fools) he did not suffer gladly, seeing them — with honourable exceptions, of course—as mere collectors forever 'flogging a dead horse'. If he had a fault, it was a tendency to judge some people over-hastily. Some of his stronger criticism was levelled at those whom he professed to regard as barely-qualified upstarts in his science, too ready by far to tamper with established classification and nomenclature, which he considered should be done only with the utmost caution—a view that surely has much to be said for it. He always enjoyed the society of like-minded persons, and (after a few drinks) would be flowing with good humour and amusing anecdotes, of which he had a copious fund. On collecting trips too he could be the best of companions, and his keenness for the chase was infectious. He was generous to a degree, going out of his way to help friends in need—financially (though he could ill afford at any time to dispense charity) and in all possible ways. For beginners and others in his sphere of interest he was always ready with help and advice; there can be few of us beetle- and bug-hunters who have never benefited from his expertise in the field, or enjoyed his hospitality at 'Acarina' and departed enriched, not least by his liberality with duplicates.

As to his collections, the Hemiptera-Heteroptera have been bequeathed to the British Museum, while his Coleoptera and extensive entomological library will, we understand, go eventually to the South London Entomological and Natural Histroy Society.

He leaves a wife and daughter, to whom we offer our sincerest sympathy in their bereavement. A. A. A.

MONTAGUE NIBLETT (1878-1967)

The Surrey commons and open spaces were the haunts of Montague Niblett for many years until failing eyesight and limbs forced him to stay at home. It was on one of these commons that he met H. J. Burkill and joined the London Natural History Society in 1926. The attraction was the Plant Gall section of the society for Niblett had been gathering plant galls and rearing the inhabitants for several years. It will be remembered that Connold and Swanton had published works on the British plant galls in the years 1908-1912.

Niblett's ability for rearing the small Cynipidae was encouraged by his new friends. The section had been formed in 1917 during the First World War by a committee that in the previous year had seen the publication, by its leading members, E. B. Bishop, L. J. Tremayne and H. J. Burkill, of a paper "Additions to the List of British Plant Galls" in the *Entomologist*. But Niblett had started rearing Cynipid flies some years before 1914 and had had some bred insects sent to Dr. Hedicke of Berlin for identification. The hymenoptera group of gall-causing Cynipidae fascinated Niblett because of their interesting life histories of which some were known at that time to have alternate generations—the flies being distinct from each other in two succeeding generations—through Adler's work, translated by C. R. Straton in 1894

Niblett was ably helped by Burkill and by J. Ross, the Joint Secretary of the Society during the First World War, a man of many natural history interests. Between them they gradually took charge of the Plant Gall section and besides being the main contributors, compiled an annual report on Plant Galls in Britain, published in the *London Naturalist*, and paid special attention to the rearing of Cynipidae. Niblett was more concerned with research into the life histories than in the distribution of the galls and their causers. He experimented and in his studies discovered the previously unknown alternate generations of several species of *Andricus* besides confirming earlier discoveries of others. During the Second World War he donated a very fine series of galls and the insects bred from them to the British Museum (Nat. Hist.) and this material formed the basis of the excellent Handbook on these British Cynipidae in the Royal Entomological Society's series by R. D. Eady and J. Quinlan. His papers on these gall causing hymenoptera cover a period of a quarter of a century. They appeared mostly in the *Entomologist* but some were in the *Proceedings of the South London Entomological and Nat. Hist. Society* which he had joined in 1930.

The rearing of diptera from galls was also tackled and Niblett's friendship with H. W. Andrews who also reared Trypetid flies must have helped to widen the interest to the other Trypetidae that do not cause galls. He read a paper on "Dipterous Galls" to the London Natural History Society in 1930 and a few years later papers on the Gall Midges (Cecidomyiidae) and the Trypetidae to the South London Ent. & Nat. Hist. Society. Many papers followed those on the Cecidomyiidae mostly in the *Entomologist* and those on the Trypetidae in the *Entomologist's Record*. His main paper, in the *Entomologist's Record* of 1939, "Notes on the Foodplants of the Larvae of British Trypetidae", have been quoted by almost every author dealing with this family since then. His bred specimens of Cecidomyiidae were presented a few years ago to the British Museum (Nat. Hist.).

Although he admitted to being "no linguist", he persevered in learning

French and German so that he could follow the many scientific papers that reached him from a world-wide circle of correspondents. He was especially indebted to the South African Trypetid expert, H. K. Munro, and from his writings was able to prepare papers on the galls of South Africa and the Mediterranean area that he read to the South London Ent. & Nat. Hist. Society.

Each December he planned his programme for the next year—dates and localities where he hoped to find galls, etc. These plans gradually included the rearing of diptera of families other than the Trypetidae and Cecidomyiidae. Messrs J. E. Collin and K. A. Spencer identified Anthomyiidae and Agromyzidae respectively for him and he made several discoveries of the plant hosts of species. One Agromyzid, a previously undescribed species of *Melanagromyza*, was named after him by Mr. Spencer.

During these many years until failing powers kept him at home he was always willing to read papers to the London societies including the Royal Entomological Society of London of which he was a Fellow from 1946 to 1964. Every year he conducted small parties of enthusiasts at field meetings. He regularly took the trouble to prepare exhibits for the indoor meetings and always expounded in a concise manner. He never refused to help young students or more experienced entomologists, making gifts of separates and specimens. His fine work and ability was recognised by the South London Ent. & Nat. Hist. Society by his election to the Presidency for 1936 and in 1965 by his appointment of Honorary Membership. The London Natural History Society had made him an Honorary Member in 1961.

His cloth cap (so different from the top hat his father, a City of London Accountant, used to wear), and side slung haversack, with his neatly clipped moustache, were easily spotted at the field meetings. More memorable perhaps was his slow wise talk in the railway train, a compartment emptied of all but staunch entomologists, by the clouds of powerful smoke from his pipe, as a few journeyed home from Victoria, after a meeting of the Royal Entomological Society or another London society.

He greatly missed these meetings when he became 'house-bound'. Although his eyes were failing he spent much time re-reading the *London Naturalist* and the *Proceedings of the South London Ent. & Nat. Hist. Society* with the aid of a large magnifying glass. He bore his long illness patiently and when the glass became of no use he loved to talk of old times and hear news of his old friends and of the events of the London Societies.

After some years at Cambridge where he reared lepidoptera gathered after bicycle rides to Chippenham Fen and other localities, he continued his occupation as a scientific instrument maker in the London area and during the Second World War became an instructor at the Training Centre at Waddon.

His rearing pots, his collection of galls and insects, he maintained in a wooden shed in his small garden. His family to whom he was devoted, and by whom much loved and revered, tolerated his special gardening with 'sleeved' small oaks, etc. His son and daughter mourn a good father, who died a great grandfather and a sincere friend of many entomologists. His wife predeceased him in 1937. To these is extended a deep sympathy.

L. P.

A. ripae Hübn.

p. 126—

Dungeness (div. 15), June 28, 1964 (1) (R. E. Scott).

L. varia Vill.

p. 127—

Lee (div. 1), 1953-57 (C. G. Bruce). Dungeness (div. 15), August 4, 1963 (1), July 7-August 7, 1964 (10) (R. E. Scott).

line 18 up—for "Minister" read: Minster.

P. porphyrea Schiff.

p. 128—

R. F. Birchenough states the record in de Worms (*Lond. Nat.*, **1954**: 74) is erroneous, i.e., he never noted it from Keston or Downe.

A. lucernea L.

p. 129—

Capel-le-Ferne (div. 8), at edge of the Warren, one at m.v.l., July 20, 1965 (R. G. Chatelain). C. Boursin examined my few Kentish *lucernea*, and pronounced the form as very near ssp. *cataleuca* Boisduval from alps of Switzerland, France and Austria (C.-H.).

S. ravida Schiff.

p. 130—

I have no doubt that in *Naturalist's Notebook*, **1869**: 141, Walker's record for Sheppey (div. 2) under "A. pyrophila" was based upon misdetermination and should in fact be placed here. He (*loc. cit.*) says: "I beat one from a haystack in 1867, and took one on ivy-bloom, 1868" (C.-H.) Pinden (div. 6), September 1, 1958 (1), November 17, 1963 (1) (Hare *teste* de Worms, *Lond. Nat.*, **1959**: 100, **1964**: 32).

G. augur F.

p. 131—

Lee (div. 1), 1957 (1) (C. G. Bruce); Orpington, 1964 (4) (R. G. Chatelain). Bromley, 1965 (1), 1966 (2) (D. R. M. Long). Dover (div. 8), 1964 (1), 1965 (1), 1967 (1), (G. H. Youden). Willesborough (div. 12), 1963 (1) (W. L. Rudland). Dungeness (div. 15), July 24, 1963 (1), June 27 (1), July 3 (1), 1964 (R. E. Scott).

D. brunnea Schiff.

p. 132—

Ickham (div. 4), one or two only, 1954-59 (D. G. Marsh). West Wood (div. 8), four larvae on birch, May 25, 1933, reared; Ham Street (div. 12), seven larvae on sallow, April 21, 1934, reared; New Inn Green (div. 16), two larvae on blackthorn, 1928, reared (A. M. Morley). R. F. Birchenough states the record in de Worms (*Lond. Nat.*, **1954**: 78) is erroneous, i.e., he never noted it from Keston.

D. mendica F.

p. 132—

Ham Street (div. 12), larvae on bramble and sallow, moths reared (A. M. Morley). Dungeness (div. 15), 1957 (C. R. Haxby, *teste* A. M. Morley); 1964 (7) (R. E. Scott). R. E. Birchenough states the record in de Worms (*Lond. Nat.*, **1954**: 78) is erroneous, i.e. he never noted it from Keston or Downe.

line 20 up—for "Knipe (1961)" read: Knipe (1916).

D. rubi View.

p. 133—

The records suggest this is native in Kent (C.-H.).

A. agathina Dup.

p. 134—

Farnborough (div. 1), rare (Hill and Mellon, *Macro-Lepidoptera of the Bromley District*, 21). Ham Street (div. 12), a larva, June 3, 1958 (A. M. Morley).

A. glareosa Esp.

p. 135—

line 8 up—for "October" read: September.

p. 136—

Dungeness (div. 15), one, September 22, 1935 (Beckwith Whitehouse MS.); one, September 25, 1964 (T. W. Harman).

line 15 down—for "1962" read: 1961.

A. castanea Esp.

p. 136—

Long Rope, Ham Street (div. 12), ♀ taken by me at sugar, September 3, 1949 (C.-H.).

A. baja Schiff.

p. 137—

Dungeness, 1963 (1), 1964 (2) (R. E. Scott).

A. ditrapezium Schiff.

p. 138—

Bromley (div. 1), four in m.v. trap, 1964, the first on June 29, with max. (2) on July 19; 1965 (7), the first on June 26; 1966 (17), with max. (4) July 8 and 11; 1967 (none) (D. R. M. Long). Crockham Hill (div. 10), larva on birch, April 30, 1949, imago, reared (C. H. Dixon). Willesborough (div. 12), July 6 (1), 1957, July 21 (1), 22 (1), 1963, July 30 (1), August 2 (1), 1964 (W. L. Rudland).

A. triangulum Hufn.

p. 139—

Chelsfield (div. 5), larvae on elm, 1964; Perry Street (div. 6), larvae on ash, late April 1964 (R. G. Chatelain).

A. stigmatica Haw.

p. 139—

Ashford, 1903 (Jeffrey, *Trans. E. Kent nat. Hist. Soc.*, **1903**: 25). Orpington (div. 1), 1957 (L. W. Siggs).

A. sexstrigata Haw.

p. 140—

Lee (div. 1), 1960 (C. G. Bruce); Bromley, 1962 (3), 1963 (2)), 1964 (1), 1966 (9) (D. R. M. Long). Kearsney (div. 8), one at flowers, 1901 (Stockwell, *Diary*). Tenterden (div. 14) (C. G. Orpin). Dungeness (div. 15), 1963 (3) (R. E. Scott).

A. xanthographa Schiff.

p. 141—

West Wickham, ♀, June 19, 1959† (R. F. Birchenough); an unusually early date (C.-H.).

A. prasina Schiff.

p. 142—

Willesborough (div. 12), one, June 22, 1957 (W. L. Rudland). Dover (div. 8), July 9, 1963, in m.v. trap (G. H. Youden).

E. occulta L.

p. 143—

Bromley (div. 1), one in m.v. trap, August 16, 1964 (D. R. M. Long). Willesborough (div. 12), one, July 25, 1963 (M. Singleton); one in m.v. trap, August 14, 1964 (W. L. Rudland).

C. rubricosa Schiff.

p. 143—

Broad Oak (div. 3), full-grown larva feeding on *Lathyrus nissolia* on some waste ground, June 13, 1965, reared 1966 (C.-H.). Ickham (div. 4), 1954-59, fairly common (D. G. Marsh). Willesborough (div. 12), moth noted by W. L. Rudland in 1957 on February 26, a very early date; and another by him there on April 30, 1958 (C.-H.). Dungeness (div. 15), April 30, 1963 (1) (R. E. Scott).

N. typica L.

p. 144—

West Wickham (div. 1), in m.v. trap, July 2-30, 1963 (16) (R. F. Birchenough); Bromley, July 11, 1966 (1) (D. R. M. Long); Bexley Heath, 1961 (1); Dartford Marshes (div. 2), one at *Silene cucubalus* bloom, June 30, 1962 (B. K. West). Willesborough (div. 12), July 19 (1), 20 (1), 23 (1), 1963 (W. L. Rudland). Dover (div. 8), 1964 (3), in m.v. trap (G. H. Youden).

p. 145—

line 5 down—for "Seale" read: Seal.

line 27 up—for "L.N." read: L.R.

E. comes Hübn.

p. 145—

Bromley (div. 1), larvae on bramble, *Anthriscus sylvestris*, *Urtica dioica* (D. R. M. Long). East Malling (div. 11), ova on undersides of apple, pear, raspberry leaves, larvae reared on these and imagines bred (Massee, *Rpt. E. Malling Res. Stn.*, **1950**: 142).

E. janthina Schiff.

p. 146—

Bromley (div. 1), larva on *Rumex obtusifolius* (D. R. M. Long).

E. interjecta Hübn.

p. 147—

Ickham (div. 4) (D. G. Marsh). Sandgate (div. 16), 1959-61 (4) (N. Reay-Jones). Sheppey (div. 2), "plentiful in lanes at dusk" (Walker, *Naturalist's Notebook*, **1869**: 141).

N. pronuba L.

p. 148—

Bromley, larva on *Rumex obtusifolius*, *Tussilago farfara*, *Poa annua*, foxglove (D. R. M. Long).

L. fimbriata Schreber

p. 149—

Dartford Marshes (div. 2), frequent (B. K. West); Sheppey (Walker, *Naturalist's Notebook*, **1869**: 141). Dungeness (div. 15), July 13-August 23, 1963 (30), with max. (11) on August 4, July 14-August 11, 1964 (7) (R. E. Scott).

P. umbra Hufn.

p. 150—

Lee (div. 1), 1952 (1), 1957 (1), 1959 (2); Shoreham (div. 6), 1962 (C. G. Bruce), Orpington (div. 1), 1956 (Chatelain, *teste* de Worms, *Lond. Nat.*, **195** : 113). Dungeness, July 5-19, 1963 (7); June 11-July 31, 1964 (25), with max. (6) on July 7 (R. E. Scott).

H. maritima Graslin

p. 152—

I showed Manley's specimen to C. Boursin, who remarked that in his opinion it was not referable to the nymotype but to spp. *bulgarica Drdt.* (C.-H.).

H. peltigera Schiff.

p. 155—

1946: Westerham (div. 5), July 28 (1); 1958: Westerham (div. 5), June 11 (1) (R. C. Edwards, *teste* de Worms, *Lond. Nat.*, **1959**: 156). 1964: Dungeness, July 26—September 8 (7) (R. E. Scott); larvae numerous on *S. viscosus*, August 28 (T. W. Harman); larvae numerous, September 19 (R. G. Chatelain); many larvae, October 10 (D. ffennell). 1967: Dungeness, four larvae, August 4 (H. E. Chipperfield).

H. armigera Hübn.

p. 156—

1958: Westerham (div. 5), one, September 4 (R. C. Edwards, *teste* de Worms, *Lond. Nat.*, **1959**: 156). 1962: Pinden (div. 6), one, October 5, by E. J. Hare (de Worms, *Lond. Nat.*, **1964**: 32). 1966: Dover (div. 8), ♂ in m.v. trap, October 13 (Youden, *Ent. Rec.*, **79**: 60).

M. brassicae L.

p. 158—

Bromley (div. 1), larva on dahlia (D. R. M. Long); larva on *Chenopodium alba*, October 1963, reared (C.-H.).

M. persicariae L.

p. 158—

West Wickham, larva on *Azalia* (C.-H.). Bexley, 1965, larva on elder, dahlia, bracken, Michaelmas daisy, *Centaurea dealbata* (B. K. West). Dungeness, in m.v. trap, June 28-July 18, 1964 (5) (R. E. Scott).

line 16 down—for **"M."** read: **Melanchra.**

P. hepatica Clerck

p. 159—

Priory Wood (div. 16), June 19, 1965 (R. G. Chatelain).

P. nitens Haw.

p. 159—

Orpington (div. 1), 1956 (L. W. Siggs).

P. nebulosa Hufn.

p. 160—

Ickham (div. 4), 1954-59, one or two only (D. G. Marsh).

P. sagittigera Hufn.

p. 161—

One, "Eynsford, Kent, 5.vi.1910"; one, "Upper Halling, W. Crocker, 8.vi.1911" (both in div. 6) (RCK).

line 3 down—for **"P."** read: **Pachetra.**

C. pisi L.

p. 163—

A ♂ taken by G. A. N. Davis, Aylesford (div. 11), June 17, 1956, and presented to me by the captor, has five wings (two left hind-wings) (C.-H.). Tunbridge Wells (div. 13), larva on *Stellaria graminea* (Stainton, *Ent. mon. Mag.*, **18**: 141).

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Norman E. Hickin

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